12 Exploiting Findings from Game Theory to Succeed in a Competitive Environment

If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is
—John von Neumann

Business is a high-stake game (Brandenburger and Nalebuff 1995). Strategy is about ensuring that the firm plays the right game in the right way. During the first two layers of the strategy design process, the foundation and the business model layers, the focus is on the firm. The third layer, the competition layer, aims at aligning the designed detailed business model with the competitive environment to finalize the strategy design. The firm's competitive advantages in the target industry are defined, either with respect to being different or being superior, where superior can mean cheaper. There exist multiple players, not directly under the control of the firm, that have an impact on success. One of them are competitors. Customers and their behaviors are another one. Key talents need also be considered, as they affect the competitive positioning. Strategy development requires to identify those players and exploit them to the firm's advantage or design counter-measures mitigating their potential negative impact. The firm's competitive advantage describes its unique positioning among all key players. In extension to traditional strategy schools embracing the competitive advantage approach, design thinking-based strategy development puts a strong focus on the role of the customer to competition.

12.1 What Competitive Advantage Means

Think about the last time you were buying a watch. What made you chose one brand over another? Or was your choice driven by features, style, size, availability? Or was your purchase an impulse decision? What was the job you wanted to get done with buying that new watch? Was it knowing the time, or was it more, or something different, like gaining status, tracking your fitness or having your e-mail around your

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wrist? These are all legitimate questions you have answered implicitly or explicitly when buying that new watch. Now put yourself in the shoes of a watch manufacturer, whether it is Apple, Blancpain, Rolex, Swatch, Tissot, or any other brand—their chief strategist, business developer, product manager, or even CEO. Wouldn't your job be much easier if you knew the answers to all those questions? The detailed business model describes how a firm operates and delivers value to its customers along its strategic focus. An absolute viewpoint, putting the firm at the center, is taken. The competitive advantage layer positions the firm, together with its detailed business model, in the competitive environment defined by its target industry and its players. A relative viewpoint is considered. Successfully competing requires understanding the different players' incentives and their threats and actions to achieve a competitive advantage themselves (Ghemawat 1997). Dynamic competitive analysis goes beyond the static analysis promoted by Porter (1980). It considers the evolution of the competitive advantage over time and looks at strategy as a game.

A successful strategy identifies and attains a competitive equilibrium among all involved players, putting the firm center stage. As such an equilibrium is transient in nature, strategy adjustments are needed over time. The competitive layer of the strategy design process defines the equilibrium, through making the competitive advantage of the firm explicit and pro-actively, rather than reactively, using game-theory, to anticipate potential changes in the competitive environment over time.

12.2 Understanding How to Compete

Even more than in the past, the success of any firm depends on its capabilities to differentiate itself from competitors in a way that customers perceive as superior and valuable. Traditional strategy scholars address the competitive positioning challenge from the firm's viewpoint. They take an inside-out view to answering the question "what makes the firm superior to its competitors". Superiority can be achieved through competing on differentiation, competition on price, or positioning in a niche segment (Porter 1980). The key challenge with this approach is that it assumes a seller driven market and relegates the customers' view on value to the second row.

More recently, novel approaches focusing on customers and their jobs-to-be-done have been developed (Christensen et al. 2016). They put the customers and their needs, their felt pains, and sought-after gains center stage. The competitive positioning is derived by mapping the firm's value proposition underlying its offerings to those needs. This approach works well in an environment with limited competition, for example, resulting from disruptive characteristics of the offering.

Although inherently sound, both approaches to competitive positioning fail to answer two key questions in an explicit and holistic way:

(1) Why should a customer prefer the firm's offering over that of its competitors?
(2) How will competitors react to the firm's competitive positioning over time?

Answering these questions leads to identify two primary approaches to succeed in a competitive environment, that is, either *being different* from competitors or *being superior* to competitors. The value proposition describes how the offerings of a firm meet customer needs and desires and thus create value for them. Once the decision factors underlying the customer needs have been described, the firm's offerings and value proposition characteristics must be identified and related to the different decision factor categories. Each characteristic is classified, depending on how it contributes to the firm's competitive positioning.

12.2.1 Competing on Differentiation or Uniqueness

A firm which exhibits its competitive advantage through differentiation, has unique traits in one or more elements related to its strategic focus, their relationships with the offerings elements OVP and OPS, and/or the external environment. Characteristics of the value proposition identified as unique are those that no other firm is currently offering and that customers are valuing. Uniqueness may result from specific capabilities, unique technologies, access to resources, or patents, to name just a few. Uniqueness is the most compelling attribute when identifying competitive advantages. These differentiations, either explicitly or implicitly visible, have an impact on the customers' decision journey. It is important to take a customer perspective when defining differentiation based competitive advantages. Unless customers see value for them from the differentiation traits, they provide no competitive advantage. Innovative firms typically compete through exhibiting a differentiating competitive advantage.

Example Apple's AirPod headphones, combined with the Apple Watch, provide a unique way to place phone calls, that is not currently available from any competitor. Indeed, not having to grab a mobile phone to receive a call is unique and valued by customers whose job-to-be-done is answering phone calls in a hands-free and uncluttered (cable-less) environment.

Note that uniqueness must always relate to a specific customer need. Different customers have different needs, and thus may or may not value unique characteristics. Successful uniqueness characteristics are hard to copy by competitors and are preferred by customers over substitutes. In most cases, uniqueness is a temporary attribute. Its potential expiry must be dealt with as part of defining a firm's competitive positioning strategy.

Example A typical example is Boing differentiating through focusing on twin-jet airplanes designed in direct collaboration with its customers, adding value for its customers by optimally addressing their jobs-to-be-done, in addition to reducing fuel costs when compared to four-engine airplanes of similar size and range.

12.2.2 Competing by Being Superior

Although superiority may be seen as a special case of uniqueness, superiority based competitive advantages focus on differentiating through the performance of business model element characteristics, rather than the characteristics themselves. Some of the value proposition characteristics may not be unique, but superior to those of competitors. If these characteristics are valued by customers, and thus have a positive impact on their decision process, they contribute to the firm's competitive positioning. Offering superior product or service quality is a typical superiority value proposition characteristic. Other superiority characteristics are ease of use, choice, after-sales-support, or being the cheapest. Superiority characteristics may also be related to emotional decision factors, like brand recognition. In contrast to uniqueness characteristics, superiority ones are easier to copy and compete against. As with uniqueness characteristics, superiority as a competitive advantage is specific to customer needs and desires. In the context of building a competitive advantage through superiority, firms need to find the right trade-off between value delivered to customers through superiority and the cost of achieving that superiority. Being superior at all cost is a failing strategy. For example, a digital watch being failsafe over a ten-year period, may be a superior characteristic, but due to the speed of technological advancement, not one that is valued by customers. Superiority based competitive advantages are often found in strategies focusing on commodity offerings with little opportunity to differentiation.

Example A typical superiority strategy is competing on price, that is, being better at offering the lowest price for a specific offering aiming at getting an identical job of the customer done. This could be for example, offering the cheapest mobile phone subscription including unlimited data usage. Another superiority competitive advantage for a mobile phone operator may be offering the fastest possible internet connection in any location.

12.2.3 Handling Indifference

Most characteristics of the value proposition do not offer any differentiation, although they are necessary to satisfy the customer's jobs-to-be-done. They can be classified into the indifferent category. Indifferent characteristics are necessary, but do not add value that customers are willing to pay a premium for. They are as such not relevant for defining a firm's competitive advantage. They are called hygiene factors.

Example Consider a bank offering a checking account. Being able to withdraw cash is considered an indifferent value proposition characteristic. It is required to satisfy the customer's need for cash. Customers may even be willing to pay for cash withdrawals, but the sole fact of offering access to cash is not influencing the customer's decision, and as such does not contribute to the firm's competitive positioning.

A firm must decide which characteristics of its value proposition to compete on and which to consider indifferent but necessary. Trying to compete on all characteristics of the value proposition will typically lead to failure. The competitive positioning of a firm is significantly defined by that decision. It should be distinct from that of its competitors.

12.3 The Competing Process

Defining a successful competitive advantage which is sustainable over time can be achieved by applying process G. The goal of process G is twofold. First, it aims at identifying the competitive advantage of the firm in the context of its detailed business model, eventually adjusting it. Second, it ensures that the competitive advantage can be sustainable by performing a game-theoretic analysis developing possible competitive strategy game plans, for reacting to external threats.

Process G—Defining a Sustainable Competitive Advantage Using Game Theory

G.1 Understanding the competitive landscape by

- identifying key players, and
- recognizing possible competition strategies applicable in the targeted industry

G.2 Putting the designed business model into perspective by answering Porter's five questions on good strategy

G.3 Determining the firm's competitive advantages centering in on its strategic focus

G.4 Ensuring the sustainability of the competitive advantages in a dynamic environment using game theory by

- identifying possible equilibria, and/or
- developing and validating competitive strategy game plans

When identifying a sustainable competitive advantage fails, the strategy design process iterates back to the business model layer to address the identified issues. If the probability of the identified issues materializing is small enough, the firm may decide to accept certain reactions from other players without mitigating them. In

this case, potential negative implications are documented as part of the strategy. Firms filing 10-K[1] or similar reports, are required to document these insights in the risk factors section.

12.4 The Competitive Landscape

Understanding the competitive landscape starts by identifying key players involved in the industry in which the firm aims at competing. Strategies on how to compete differ based on the industry and the structure of its participants. The competitive landscape analysis step G.1 addresses both.

12.4.1 Identifying Key Players

Building on Brandenburger and Nalebuff's (1995) company value net framework, seven categories of players whose actions may have a material impact on the success of the firm's strategy can be identified.

These are:

(1) *Customers*, both end-users and decision takers, as well as targeted non-customers.
(2) *Competitors*, including those that offer substitute products and services.
(3) *Complementors*, supporting the firm's offering to deliver value to its own customers in a complementary way.
(4) *Suppliers* of raw material and unfinished parts.
(5) *Employees*, especially those performing differentiating activities or participating in creating superiority.
(6) *Investors*, providing the necessary capital to implement the strategy.
(7) *Regulators*, ensuring fair behavior of all actors.

They are shown in Fig. 12.1. Although this list exhibits a significant resemblance with Porter's five-forces framework (Porter 1979), the competitive landscape analysis takes a confirmatory approach, rather than a designing one. This allows for a more open-minded design of the strategy than would be possible by building upon a five-forces analysis. The competitive environment analysis only addresses those players that are actual threats or opportunities to the firm and its strategy, rather than analyzing all potential players.

12.4.1.1 Customers

Probably the most important player is the customer. A key question to answer is "what would make a customer change supplier/vendor?" The detailed business

[1] A 10-K form is an annual report required by the U.S. Securities and Exchange Commission (SEC), providing a comprehensive summary of a firm's financial characteristics.

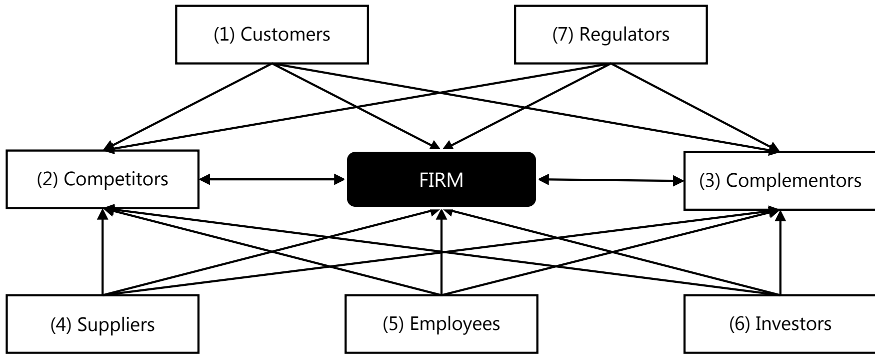

Fig. 12.1 Key players affecting the success of the firm in a competitive environment

model, especially its customer relationship element (CR), provides a starting point for understanding the customer in the context of competition.

Which features, or lack of features, would make a customer become a non-customer? What role does the quality of the offering play in the customer's purchasing decision? How sensitive are customers to support services? What role do comments from other customers, for example on social media platforms, play in the customer's decision journey? How often could an offering break or fail, before a customer decides to switch supplier? What change in price, all else remaining the same, would make a customer look for a different offering? Answering those and similar questions allows defining the boundaries within which a customer feels valued.

Example Figure 12.2 illustrates the *customer value zone* concept related to the two dimensions processor speed and laptop price, for a computer manufacturer. As long as the laptop offerings of the firm remain within the value zone, the customer will not seek-out a

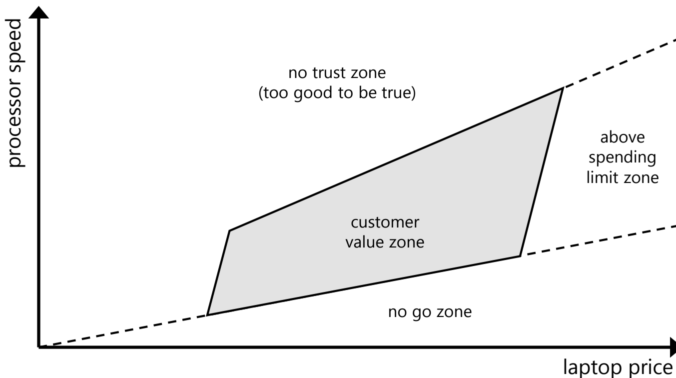

Fig. 12.2 Value zone of a targeted customer segment related to laptop computers and the two variables processor speed and laptop price

different manufacturer. As such, competitive advantages must ensure that the offerings will remain in the customer value zone. Different competitive advantages define distinct customer value zones.

12.4.1.2 Competitors

Understanding competitors requires understanding if and how they might react to the firm's new or adjusted strategy, assuming unchanged customer jobs-to-be-done. If competitors decide to react, they often do so along any of the four dimensions, that is,

- *improving the perceived quality* of the offerings without charging for the improvements, to maintain or increase market share,
- *adapting the characteristics or features* of their offerings, including introducing new bundling, to attract customers specifically targeted by the firm's strategy,
- *offering superior support service*, from marketing, through sales, up to after-sales support, focusing on strengthening the customer relationship, or
- *reducing price*, to retain existing customers.

Any competitive action aims at changing the perceived value of the offering, as identified by the customers, with the goal to retain existing customers and/or attract new ones from competitors.

Example Consider for example Apple and its competitor Samsung. Apple introduced ApplePay in October 2014. Shortly thereafter, in August 2015, Samsung reacted by introducing a payment solution on its own, SamsungPay, to avoid losing customers that value the payment functionality to Apple and incentivize Apple customers interested in using their phones as mobile credit cards to switch vendor.

12.4.1.3 Complementors

Complementors are on often forgotten players in the competitive analysis. Complementors offer products or services that only add value to customers in conjunction with the firm's offering. From a customer perspective, complementors add the firm to the consideration set of potential customers, valuing both the offerings from the firm and its complementors. Successful complementors create win-win situations. But they may also introduce dependencies that the firm needs to monitor and potentially actively manage, as changes to the complementor's offerings may affect the value of the firm's products and services.

12.4.1.4 Employees

The success of any company depends on key employees, more precisely, their skills and relationships with customers. Any strategy defining its competitive advantage through key employees needs to understand what could make these employees

leave. Typical employee criteria to consider at the strategy level are, in alphabetical order, appreciated, challenged, empowered, involved, mentored, trusted, valued, and well paid. Depending on the designed detailed business model, not only the skills of specific employees may be relevant, but also their availability. This is typically the case for consulting firms.

12.4.1.5 Suppliers

Although suppliers usually operate in a competitive environment, high value-adding supplies with significant bargaining power may decide to offer a firm exclusivity on certain raw materials or supplied parts or not work with a given firm. Such decisions by key suppliers may have an impact on the viability of the designed detailed business model and can impact the firm's competitive advantage. Therefore, any competitive landscape analysis needs to identify

– key *suppliers*, and
– their *bargaining power*,

and design activities to leverage opportunities and counter potential threats from them, to ensure sustainability of competitive advantages relying on suppliers. Typically, these may be long-term price agreements, guaranteed quantity availability, or exclusivity deals.

12.4.1.6 Investors

Some strategies require significant capital to grow (for example, to acquire new customers) and/or to operate (for example, to finance production equipment). Having access to investors satisfying these capital requirements provides a competitive advantage. As with other players, investors do not operate in a vacuum. They operate in a competitive landscape and have scarce capital to invest. The key competitive landscape question to answer, with respect to investors, is: "Under what circumstances would investors switch and invest in a competing firm?"

12.4.1.7 Regulators

The last but not the least important player to understand is the regulator. The term regulator is used as a synonym for governments, unions, and similar market force regulating actors. A sound competitive landscape analysis identifies all regulators, whose actions may impact the firm's strategy. Especially in highly regulated markets, like financial services, but also perceived less regulated markets, like taxi driving, the strategy needs to address legal and regulatory requirements upfront. A competitive advantage may be designed based on specific regulations or their interpretations.

12.4.2 Possible Strategies for Competing

There exist a number of generic, as well as industry specific, strategies for competing. They describe how typical firms behave in a given competitive environment. Competition strategies are rarely used on their own. They are applied to find a competitive equilibrium or to compete until there is a final winner.

Signaling strategies Rather than act, the firm signals to the market players, either explicitly or implicitly, how it would react to a given threat. If the signaled reaction is trustworthy, the threatened players may refrain from acting. Signaling is a low-cost strategy which works well in markets with a small number of trusted players. The challenge with signaling strategies is that, if signals are ignored, the signaling firm must react to avoid losing credibility.

Monopolistic strategies If the firm positions itself such as to be perceived as a quasi-monopolist, it may nip in the bud every potentially threatening player through signaling power. Consequently, players avoid competing with a monopolist strategy firm. This approach works well if the monopolist strategy firm can show enough power. It is typical in winner-takes-it-all type of industries, that is, industries primarily driven by size. Consider social media firms like Facebook or Twitter as typical firms following a monopolistic strategy.

Capacity constraint strategies Some firms operate in industries where capacities are constrained, usually due to limited availability of raw materials or adequately skilled human resources. If, in addition, large fixed costs or investments are a precondition for competing, players may aim at producing at a capacity that would make any other firm entering the market operate at a loss. Rather than implement a monopolistic strategy, firms implementing a capacity constrained strategy often only need 20–30% of market share, depending on the surrounding parameters, to succeed and deter new entrants. The steel industry is typical industry in which a capacity constraint strategy can work.

Cannibalization or market squeezing strategies Firms aiming at competing through cannibalization offer products and services that address similar jobs-to-be-done at a discount price with the sole goal to push other firms out of the market by making them unprofitable. Once the other players have exited the market, the cannibalizing firm increases prices again to recoup the suffered losses. Cannibalization strategies often target firms streamlining their portfolio of offerings. They work well in low-margin industries. They often require significant up-front capital.

Price elasticity strategies Competing on price elasticity aims at outperforming competitors by better understanding the price elasticity and attracting new customers at the margin. Price elasticity strategies are tightly related to a superior understanding of the willingness to pay of customers and the willingness to sell of suppliers. The can be very successful and hard to imitate, if implemented well.

When studying possible competition strategies, it is important to also understand how customers will react. Customers may wait before they switch the firm they are buying from. Customers may interpret prices, and especially price changes differently than do firms. They may try to game the system by anticipating competitive reactions. Customer reactions or failures to react in an expected way may have a significant impact on the success of implementing any competition strategy.

12.5 The Business Model in the Competitive Environment

No name is more closely related to the concept of competitive advantage in strategy than Porter (1980, 1985). According to his line of thoughts, strategy is about choice, namely choosing who to serve and who not to serve, what to do and what not to do, resulting in a unique way on how to compete. Strategy is the antidote to competition. The detailed business model provides one perspective on the firm's competitive positioning. Competitive analysis aims at ensuring that the firm's strategy, including its detailed business model, offers a unique way to be superior and/or different from competitors.

In 1996, Porter published a paper in the Harvard Business Review called "What is strategy?" (Porter 1996) summarizing what characterizes a good strategy. Any sound strategy providing a competitive advantage is based on business model characteristics resulting from answering five key questions (Magretta 2012):

(1) *What distinguishes the value proposition of the firm from that of competitors?* Answering this question requires understanding which customers to serve and which not to serve. It also means defining which customer jobs-to-be-done to satisfy and which not. It means showing how value is created for customers that results in profitability for the firm.
(2) *Which activities does the firm perform in a different or superior way than its competitors? What is the uniqueness of the firm's value chain?* These questions are answered by taking an inward viewpoint and focusing on understanding how the tailored or unique elements of the firm's value chain support delivering the value proposition. The identified activities form the firm's core competencies.
(3) *Which trade-offs, different from those of its competitors, does the firm make?* Strategy is about choice. Choice requires trade-offs. Identifying trade-offs allows understanding how the firm creates a sustainable competitive advantage. It also means clearly defining what the firm does not offer, who the firm is not serving, and where the firm is not competing.
(4) *Which strategic fits does the firm amplify?* Strategic fit means relating individual activities of the value chain to each other, leveraging core competencies to create value in excess of that of the individual activities in a way that is difficult, if not impossible, to imitate.

(5) *How is the strategy supporting continuity over time?* Even though strategy is about change, continuity over time of key elements of the strategy is an integral property for achieving a sustainable competitive advantage. Continuity reinforces identity and trust. It also helps building differentiation though lasting relationships with customers, partners, and suppliers.

Identifying the firm's competitive advantages and ensuring that they are not transient requires relating the answers to these five questions to the elements of the firm's detailed business model. Depending on the answers given, the detailed business model may be iteratively refined or amended.

12.6 Designing the Firm's Competitive Advantage

Designing the firm's competitive advantage requires answering the key question:

Why should a customer buy the firm's offering
rather than that of its competitors?

Answering that question can be subdivided into answering three related questions:

(1) What makes the detailed business model of the firm different from or superior to that of competitors?
(2) Why is the identified differentiation or superiority preferred and valued by the targeted customers?
(3) How can the identified differentiation or superiority be sustained over time?

First, insights are gained from the answers to Porter's five key questions about strategy. Objectivity is important. There is no value in fooling oneself. The often-heard argument "we have the best employees" does not provide a competitive advantage unless "best" is valued by customers as distinct or superior.

Next, the answers to Porter's questions are related to the different elements of the detailed business model. The detailed business model elements are re-assessed and potentially refined, considering the competitive landscape and its players. Each element is reviewed in the context of it offering differentiation or superiority when compared to competitors' business models. The competitive advantages identified should be distinct, or at least sufficiently different, from the ones of competitors. They need to be well articulated and understood by the target customer segments to ensure they act on them. They should be hard to imitate and/or exhibit little interest in copying. A firm should limit its competitive advantages to a small number. The quality and sustainability of competitive advantages are more important than their quantity.

12.6.1 Customers Based Competitive Advantage

Customer centric competitive advantages are identified by reviewing the customer related elements of the firm's detailed business model, that is, the CR and CD elements. They may also be found by understanding relationships between customer elements CS and CJ, and the offerings elements OVP and OPS. The third area leading to identifying competitive advantages are links between the detailed business model and the external environment. A competitive advantage may be identified by focusing on underserved customer segments or addressing previously unmet jobs-to-be-done. Capabilities allowing to understand the specificities of customer jobs-to-be-done, can also be translated into a competitive advantage, especially when combined with customizable offerings.

Example In its early days Research in Motion (RIM), the provider of the legendary Blackberry phones, defined its competitive advantage by targeting business customers and their job-to-be-done of secure communication, while competitors targeted private customers and corporations focused on buying on price rather than on specific features.

A competitive advantage can also be identified as the capability of retaining customers (CR element) and spurring recurring purchases (CJ element), by introducing switching costs.

Example Nestle's Nespresso gained a competitive advantage by introduce switching costs through patenting their coffee capsule design.

Example For many firms, like Starbucks or Nike, their brand is a hard to imitate competitive advantage.

Other areas where competitive advantages can be designed into the detailed business model are around delivering approaches (CD element), by better understanding where and when to deliver purchased products and services.

The *Competitive Positioning Canvas*[2] (*CPC*), shown in Fig. 12.3, is a framework to document insights and knowledge that support identifying a firm's competitive advantage focusing on customers and their jobs-to-be-done. The CPC is not the firm's competitive advantage by itself but a tool that provides a common language to executives, strategists, and consultants, for leading the discussion and decision about competitive positioning. It helps take a different perspective and ensures that no key insights are missed.

Given one or a group of customer needs and jobs-to-be-done, the CPC allows identifying how customers define value in their utility function. It first focuses on *rational decision factors*, meaning understanding what are the must have and the nice to have *value* characteristics driving customer decisions. These are typically required features, like product and service quality, usability, or after-sales support, to name just a few. It also means understanding the customers' perception of *costs*,

[2]The *Competitive Positioning Canvas* builds upon an INSIGHT published by innovate.d llc in January 2019 as "Understanding a firm's competitive positioning". It can be found under https://www.innovate-d.com/insight-101/.

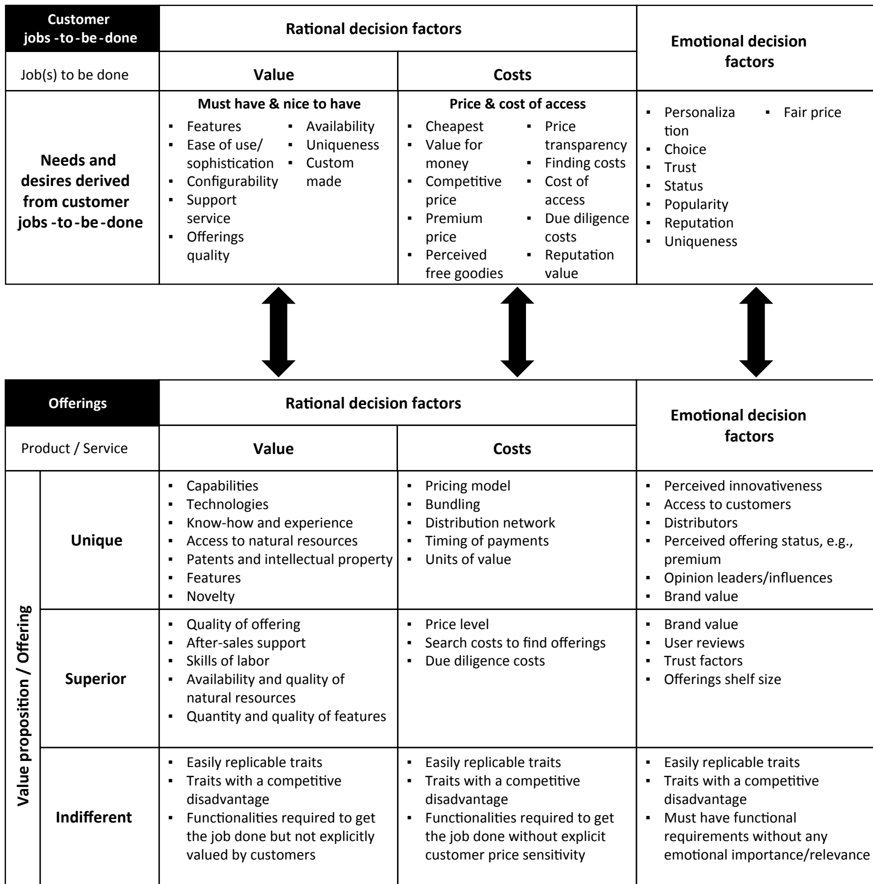

Fig. 12.3 The Competitive Position Canvas (CPC) providing a common language for describing the characteristics that allow a firm to describe its competitive advantage

looking a price (cheapest, value for money, competitive, premium) as well as access costs (costs related to searching for an offering and buying it).

The second dimension to explore to understand customers decision factors is the *emotional dimension*. Emotional decision factors can be classified based on the nature of the relationship between the firm and the customers, that is, either one-way (brand, reputation, advertising) or bi-directional (customer intimacy, pro-activeness, distribution channels).

As shown in Fig. 12.3, the top part of the CPC represents the considered jobs-to-be-done and relates them to the needs and desires derived from the jobs the customer wants to get done. In a second step, the bottom part of the CPC represents the offerings characteristics and documents the value proposition characteristics by classifying them into the three possible competitive advantage categories, that is,

uniqueness, superiority, or indifference. Finally, the value proposition elements are matched to the customer decision factors, ensuring optimal competitive advantage by relating the top part of the CPC to the bottom one.

12.6.2 Offerings Based Competitive Advantage

The most common area where competitive advantages are found when focusing on an offerings strategic focus is in the products and services element (OPS), as well as the associated value proposition element (OVP) of the detailed business model. Typically, hard to copy features lead to differentiation. Superior quality based on unique production and quality control processes are another area where a firm can generate a superiority based competitive advantage. Competitive advantages do not have to directly relate to the core of the offering. They may be based on support services or even packaging of the products offered. Consider a premium airline differentiating through on-board service, rather than flight schedules. The CPC in Fig. 12.3 helps identify offering based competitive advantages, starting with the bottom part, the offerings part, and relating them to the top part, the jobs-to-be-done part, in a second step.

12.6.3 Capabilities Based Competitive Advantage

A firm exhibits capability based competitive advantages by having unique capabilities, for example, production machines, physical resources, processes, intellectual property, or patents. Capability based competitive advantages are primarily designed around economies of scale, providing superiority, and economies of scope, providing differentiation. Competitive advantage can be developed through combining existing capabilities in a unique way along Porter's line of amplifying strategic fits. A competitive advantage can also be achieved by leveraging skills in a way hard to imitate. Gaining efficiency through outsourcing and managing the relationships with partners and suppliers can also lead to a competitive advantage, assuming that part of the underlying value can be made available to the customers.

12.6.4 Financials Based Competitive Advantage

Many firms define their competitive advantage through being able to match any competitor's price. Although challenging, due its transient nature, and the risk of being cornered or squeezed-out of the market by larger competitors, competing on price can be a possible competitive advantage. Firms focusing on price-based competitive advantages are often found in industries that are perceived as offering commodity products or services with little or no differentiation, like consumer electronics, the airline industry, or grocery stores.

More recently, competitive advantages build around unique pricing models have emerged. Rather than taking a firm-centric approach to pricing, competitive pricing models are designed around understanding how customers perceive paying for the value delivered by a product or service.

Another way to achieve a financials based competitive advantage is coming up with a unique way of dealing with price externalities, for example, forging exclusive agreements with perishable resources suppliers.

12.7 Winning the Competition Game by Sustaining a Competitive Advantage Using Game Theory

Defining and implementing a competitive advantage often results in adverse reactions from competitors that need to be countered to win the competition game and remain profitable. Winning the competition game means being prepared and having though-through scenarios for all major competitive reactions. When designing potential actions to react to competitive threats, alternative approaches to competition need to be identified.

Consider a firm that competes on differentiation, through patented features. There exists a threat from competitors adding features to their offerings that substitute the value provided by the patented features without infringing on any patents. One way of addressing such a threat is through adjusting the strategy by re-defining the target customer segment such that the competitor's substitute is no longer considered a viable alternative. Another way of addressing that threat is inventing new features valued higher by customers than substitute features offered by competitors. Another alternative would be improving upon the existing patented features by showing their superiority to the substitutes from competitors. A fourth alternative would be competing on price, discounting the patented offering and providing a superior value/cost ratio to customers.

Example A typical example of regaining competitive advantage through unique services models has been implemented by Lenovo, the computer manufacturer. It services computers at the buyer's location worldwide (or nearly), rather than having customers send-in their broken computers for repair.

Examples of distinct pricing models are pay-as-you-go models, no longer needing up-front payments or introducing in-app purchase options that tie the price more closely to the value delivered by a specific feature.

Some of these examples may seem obvious, some far-fetched. The one thing they all have in common, is that they are based on creative ideas designed, validated, and implemented, focusing on offering value to customers in a competitive way.

Competition can be described as a game with two or more players (Morgenstern and von Neumann 1947; Nash 1950, 1951; Dresher 1961; Ghemawat 1997; Dixit and Nalebuff 2008). In some cases, the game is a zero-sum game with a winner and a loser, like chess or checkers. Most games modeling economic situations, are non-cooperative games. The typical competition game is based on imperfect information and includes some degree of randomness.

Game theory provides frameworks for studying competing strategy games and their impact on competitive actions of the players. Their use in business is still in early stages (Brandenburger and Nalebuff 1995; Ghemawat 1997). There exist two types of game theories that fit well into the abductive design thinking-based strategy design process. They are

– *equilibrium theories*, like the Nash equilibrium, allowing to study and understand competition through *differentiation*, and
– *game tree theories*, like the min-max approach, focusing on determining the optimal action to take under uncertainty when competing through *superiority*, assuming that competitors aim at maximizing their utility in a rational way.

Rather than start an extensive analysis of a firm's strategy using game theory, I recommend putting the focus on those aspects of game theory that help validate or invalidate the effectiveness of the designed strategy to competitive threats. Only reviewing a small subset of options is needed to understand potential competition and designing possible scenarios using game theory. Game theory helps analyze the competitive environment by supporting the validation of the designed strategy, especially focusing on identifying potential flaws and being prepared for competitive reactions. Game theoretical analysis in strategy is about being prepared to play the competitive game under uncertainty.

12.7.1 Competitive Equilibrium

Understanding possible competitive equilibria is based on both the firm and the competitors choosing to compete on being different. For example, a firm and its competitor (assuming for the sake of simplicity only one competitor) may have the choice to either focus on private or on corporate customers, as illustrated in Fig. 12.4. Game theory would require determining the value of each of the four options. This is sound in theory, but much harder in practice. And it gets even harder if considering more than one competitor. Therefore, focusing on qualitative assertions, provides possible choices. Once choices are characterized, an equilibrium state is sought, as shown in Fig. 12.4a. An equilibrium state is a state where both firms are better off than any other alternative state. The focus is on both players, the firm and its competitor, rather than one player alone. In some situations, as illustrated in Fig. 12.4b, there does not exist an equilibrium situation, requiring alternative competitive analysis to design possible scenarios to win the competitive game.

firm with superior capabilities to serve private customers in an effective way	competitor with superior service capabilities for corporate customers: corporate customers	competitor with superior service capabilities for corporate customers: private customers
corporate customers	all corporate customers switch to the competitor because of its superior capabilities to service corporate customers firm loses competitor wins	some corporate customers switch, but are unhappy because firm fails to offer expected service private customers switch to competitor firm marginally loses competitor wins
private customers	private customers switch to the firm corporate customers switch to competitor who already has an advantage in serving them firm wins competitor wins	competition for the same customer segment results in a price war, as private customers primarily buy on price firm loses competitor loses

(a) Equilibrium when competing around customer segments served

firm having similar capabilities and cost structures as the competitor	competitor having similar capabilities and cost structures as the firm: corporate customers	competitor having similar capabilities and cost structures as the firm: private customers
corporate customers	both firm and competitor compete on price as there is no other differentiation possible, resulting in a price war firm loses competitor loses	although focusing on private customers, the competitor outcompetes because economies of scale allow for cheaper prices, also attracting corporate customers firm loses competitor wins
private customers	although focusing on private customers, the firm outcompetes because economies of scale allow for cheaper prices, also attracting corporate customers firm wins competitor loses	both firm and competitor compete on price as there is no other differentiation, resulting in a price war firm loses competitor loses

(b) Situation where no equilibrium exists when competing around customer segments served

Fig. 12.4 Illustration of two players focusing their competitive advantage on either servicing corporate or private customers

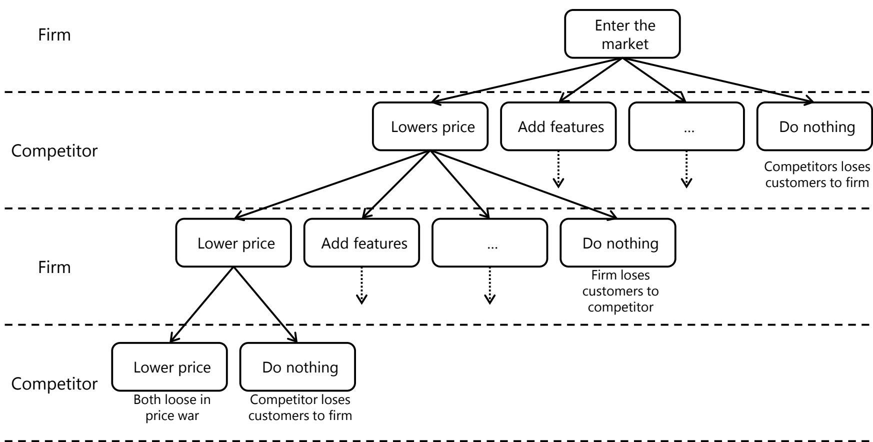

Fig. 12.5 Subset of a sample game tree modeling competition between two low-cost mobile phone manufacturers

Equilibria are often temporary in nature, as the value of the different options changes over time. Real life is usually more complex than the examples in Fig. 12.4, and includes more than two players and more than two options. Approximations and the application of common sense during the analysis and modeling is needed to achieve meaningful results in reasonable time. In most cases where players compete on differentiation, the equilibrium analysis is key to avoid leaving money on the table.

12.7.2 Modeling Competition Using Game Trees

Game tree theory, also called min-max theory, takes a different approach than equilibrium theory. Rather than looking for an equilibrium, it models actions and reactions of the involved players over time to find the most promising decisions, similar to how chess is plaid.

Example To illustrate the modeling tool, consider two payers offering similar low-end mobile phones. At any given point in time, each play has three options, that is (i) reduce the price, (ii) add new features, or (iii) do nothing. Figure 12.5 illustrates a subset of the possible decisions each company can take represented by a decision or game tree. Companies alternatively decide about their next move up to the point where one either loses, wins, or both are stuck in a draw situation. Such a situation is called a leaf in the game tree. Once the game tree has been constructed, the value of each intermediary node is determined, assuming that each player always choses the move that leads to the best outcome from its perspective.

As in the equilibrium approach, using game tree theory requires common sense, especially to value the quality of a decision at a given leaf of the game tree. The approach helps strategy designers think though multiple options. It reduces the risk being caught by surprise when competitors react to possible threats.

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