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Master Program in Business Administration

PULLING THE CHAIN IN THE MMR: *AN EXPLORATORY ANALYSIS ON THE BUSINESS MODEL OF ONLINE DELIVERY COMPANIES AND THEIR SHIFTING ROLE WITHIN PORTER'S 5-FORCES FRAMEWORK*

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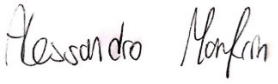

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INTRODUCTION & SUMMARY

THE REASON FOR THE DISSERTATION – Since 1979, Porter's model has represented one of the most important and most taught corporate strategy frameworks that aim to determine the attractiveness of an industry, based on five forces. Despite this, it seems that it struggles to maintain the rhythms of today's economic situation, characterized by dynamism and constant change (Beattie, 2021), returning a snapshot at a certain point in the past in which the painted forces seem framed and fixed. The five forces, as defined by Porter, most often only partially explain the attractiveness of an industry, especially in light of the fact that companies increasingly rely on third parties to be able to offer to their customers complete products and services (Yoffle and Kwak, 2006). These complementary actors are considered as the sixth force of the model since the time of Brandenburger and Nalebuff, who in 1996, through the concept of "Co-opetition" and the Value Net model, were the first to demonstrate the importance of such players in determining the competitive situation of an industry. Specifically, the two authors noted how these actors help to increase the size of the market (cooperation effect), but then participate in the battle for market share (competition effect). Since then, the literature concerning complementary actors has developed mainly by deepening the part concerning cooperation, while as regards the other side of the coin, the literature of reference seems to be somewhat fragmented, lacking an overall vision. Even in everyday economic life it often happens that companies' executives overestimate the common interests with complmentors and underestimate their potential for the conflict and investments needed to align their respective strategic interests (Yoffle and Kwak, 2006).

THE AIM OF THE DISSERTATION – The main objective of this master thesis, relying on the literature about innovation and value creation, is to carry out an exploratory analysis aimed at investigating the role of disruptors that complementors can assume within a given strategic landscape. Specifically, following the theories of Adner and Lieberman (2021) regarding disruption though complements, it will be shown how an increase in the bargaining power of complementary actors corresponds to a redefinition of the position that they can play within the Porter’s model, capturing dynamic elements that can help make the framework more adequate given the times we are living. The case of analysis of the Mass Market Retailers (MMR) industry and the relationship with online pure players (especially delivery services) will be

presented, especially after the advent of the COIVD-19 pandemic, which gave a considerable boost to the competitive scenario of the industry. All of this could be helpful for future researches aimed at investigating the risks that a company may run by choosing to enter into partnerships with complementary actors.

CHAPTER 1 – LITERATURE REVIEW – The first chapter of this thesis presents the literature concerning Porter's model of the five competitive forces (1979; 2008). Each of these five forces will be briefly introduced, along with the main reasons that make this framework one of the milestones of the literature concerning business strategy. Subsequently, a critical analysis of the model will be presented, in order to highlight the causes that led it to become a framework capable of reproducing an image of the competitive situation of a given industry, providing useful information for short-term strategy planning and identifying areas in which it is possible to achieve a competitive advantage, but not suited to modern times, due to the constantly evolving competitive scenarios. Specifically, evidence will be brought from that part of the economic literature that argues that such a framework is abstract, static, unsuitable for maintaining the competitive advantage and limited in those five competitive forces alone.
Then we will introduce the theories of Brandenburger and Nalebuff (1996), whose concept of "Co-opetition" historically represents the affirmation of complementors as the sixth competitive force.
These two works will form the basis on which the dissertation rests.

CHAPTER 2 – COMPLEMENTORS: FRIENDS OR FOES? – The second chapter, starting from the concept of "Co-opetition" by Brandenburger and Nalebuff (1996) and from the Value Net presented by the two authors, aims to highlight how the role of complementary actors has become fundamental in the considerations regarding profitability and attractiveness of an industry, despite the fact that these players are often confused with suppliers since both add value to the focal firm's offer.
Initially, the main differences between the role of suppliers and complementors will be identified, in order to give a definition to the latter that can uniquely distinguish them. Subsequently, borrowing some concepts from the value creation literature, three perspectives will be identified that explore how complementary actors affect value creation, namely economic, capabilities and marketing perspectives. Specifically, within the capabilities perspective it is possible to place the theories regarding the disruption through complements of Adner and Lieberman (2021), which investigate the role played by complementary actors in the

value creation process and, above all, how they can cause a shift in profitability within a competitive context. In this way, on the one hand, the void in the literature of reference will be filled, thus deepening the less enunciated side of the concept of "Co-opetition" by Brandenburger and Nalebuff, and on the other expected consequences (or scenarios) in the strategic evolutions of a competitive landscape will be provided, which involves an increase in the bargaining power of complementors.

CHAPTER 3 – THE ONLINE GROCERY MARKET – The third chapter focuses on the analysis of the case brought up in this thesis, namely that of the Mass Market Retailers (MMR) industry. Specifically, it has seen a growth in demand for the online channel due to the advent of the COVID-19 pandemic, which has given an important boost to e-grocery, with a consequent process of evolution of business models, which would normally have taken years but actually happened in a few months.

First, market trends will be analyzed, confirming the hypothesis that the pandemic has brought with it changes in the customers' consumption habits which are here to stay, especially with regard to shifts in spending, loyalty and cost. Subsequently, we will move on to the examination of the data relating to e-grocery and both historical and prospective trends of this market, confirming the general idea that online spending will remain the main growth driver within the MMR industry. Afterwards, the analysis of the competitive landscape of the industry will follow, first by defining the main players who are shaping the market, that are online pure players (including delivery services), ecosystems and incumbent retailers (Tjon Pian Gi and Spielvoge, 2021). Then defining the three domains identified by McKinsey & Company (2021) in which a player operating in this industry is called to excel in order to correctly manage the transformation required by the needs of the online channel. Finally, the three main methods of managing and integrating the online channel with the current traditional retailers' business models and the related profitability results will be introduced.

CHAPTER 4 – COMPLEMENTORS' SHIFTING ROLE – The objective of the fourth and final chapter is to combine the strategic and competitive consequences expected of Adner and Lieberman (2021), set out in the second chapter, with the analysis of the MMR industry carried out in the third, in search for a shift in the role that those complementary actors can play within the famous framework of competitive forces.

It will therefore start by setting as a starting point a brief analysis of the five competitive forces of the industry, to which will be integrated the roles that are occupied in the framework by delivery services or, more generally, by the third parties with which traditional retailers have

decided to partner up in order to open a way towards the online channel. This step will be made possible by putting together the definitions given in the second chapter and the analysis conducted in the third. Despite this, the trends highlighted by the analysis of the industry suggest a certain dynamism, raising doubts about what roles these players are really playing.
From here a comparison will take place between the characteristics of the disruption through complements of Adner and Lieberman (2021) and the evidence brought by the data collected during the market analysis phase, ending commenting them.

CHAPTER 1 – LITERATURE REVIEW

An examination of the relevant literature regarding Porter's Five-Forces model and the main criticisms raised against it will be carried out in this chapter. Some of these, specifically those concerning the intrinsic static nature of the model and the difficulty it encounters today in placing companies in its forces, will be the focus of subsequent chapters. What follows is a discussion about the theoretical contribution provided by Brandenburger and Nalebuff in their 1996 publication "Co-opetition" will take place, in which the two authors bring to light the importance of complementors and their vital role in today's economy that affirms these types of actors as the sixth force of the model, given the dynamic times we are going through. These theories will be useful in subsequent chapters in order to make the application of the Porter's model more dynamic and current.

1.1 Porter Five Forces Model

The Five-Forces model, first proposed by Harvard Professor Dr. Michael E. Porter, around 1979, has gained considerable attention and acknowledgment worldwide, due to its relevance and influence on corporate, business, and organizational strategy formation. Since more than forty years, it is still one the most fundamental, one of the most universal, and most frequently taught strategy concepts in business schools so far, and it is generally, and widely, also much recognized by managers, strategists, marketers, and scholars (Ketels and Keller, 2015).

Porter revolutionized how managers and entrepreneurs analyze the competitive environment their companies are within, developing a way to understand the attractiveness of an industry based on the examination of specific forces that have the ability to drive industrial competition. In particular, the idea that brought the author to develop his famous framework is that competition within a particular industry is the result of forces that go beyond the players that are part of it, which can determine the potential for profit (Porter, 1979). The resulting model could be applied in every industry, irrespectively of which are the players or the final customers and what is the degree of competition.

The goal of the framework is to support in finding a position in the competitive environment where the focal firm can on one hand influence the forces in its favor and in the other defend itself from them. By keeping in mind these underlying competitive pressure sources, a corporate strategist can plan a strategic agenda of action such as stressing strengths and weaknesses of his or her company in order to determine which is the best position for it in the competitive scenario, looking for areas where industry future trends appear to hold greater significance and opportunities or threats.

1.1.2 Contending Forces

The strongest competitive forces drive the profitability of an industry and play a central role in the strategy formulation process. Every industry has its own structure, called also "set of fundamental economic and technical characteristics" (Porter, 1979), and based on them, different forces can shape competition in different ways. A few of these characteristics are critical in order to understand the impact of each force, which are: *the threat of new entries; the bargaining power of suppliers; the bargaining power of buyers; the threat of substitution; rivalry among existing competitors* (see Figure 1).

Figure 1 - Forces governing competition in an industry (Porter,1979)

1.1.2 Threat of Entry

New entrants to an industry increase pressure on costs and prices, together with a higher investment rate required to compete, as they bring with them new capacity and desire to gain market share. As a consequence, a new entry should be seen as a cap to profit potential.
There are two factors that help in determining the degree to which an industry is subject to the threat of entry, the first one is the entry barriers: the higher these barriers are, the less likely is the possibility of entry for new players coming from outside the competitive scenario. The second one is the reaction that new entrants expect from incumbent players. From Porter perspective (1979), it is not the act of entry itself that holds down profitability, but the pressure that this eventuality has on industry's incumbents.
For what concerns entry barriers, Porter identified seven main sources that constitute them, which are:

- Supply-side economies of scale;
- Demand-side benefits of scale;
- Customer switching costs;
- Capital requirements;
- Incumbency advantage independent of size;
- Unequal access to distribution channels;
- Government policy.

In assessing the entry barriers, an incumbent player should always bear in mind the capabilities a possible entrant could possess and if these barriers can be circumnavigated in creative ways. Moreover, the expected reaction incumbents may have in case of entry will influence for sure the decision a possible new entrant could take: if, in fact, the incumbent has resources to fight back and cut prices in order to maintain its level of market share or if industry growth is quite slow, the decision about entry could be not so straightforward.

1.1.3 Bargaining Power of Suppliers

Suppliers play an important role in determining the profitability of an industry, due to the ability to seize most of the value and keep it for themselves, thanks to actions such as higher prices

charged to industry's incumbents, putting limits on the quality of products or services, or shifting costs to the focal actors.
What defines a supplier as a powerful one are the following features:

- Its industry is more concentrated than the industry it sells to;
- Its revenues come from different industries;
- Industry participants face switching costs in changing suppliers;
- There is no substitute for what the supplier provides;
- The supplier can credibly threaten to integrate forward into the industry.

1.1.4 Bargaining Power of Buyers

Buyers can be defined as powerful as their negotiating leverage increase with respect to industry's incumbent players, especially in the case where their price sensitivity is high, and they can put pressure on price reductions. By making industry participants one against the other, they can threaten industry's profitability, usually by requesting for higher quality of products and services or by cutting on price.
In general terms, what determines the degree of a customer's bargaining power are factors such as the number of buyers, the level of standardization of the product and services offered by the industry's incumbents and the threat of backward integration.
Moreover, the price sensitivity of a buyer is determined by:

- The proportion of cost that the product or service sold by industry's participants represents in buyer's procurement budget;
- Its industry is characterized by low profits or there is high pressure in order to lower as much as possible the purchasing costs;
- The quality of buyer's products or services is little affected by the industry's product;
- Buyer's other costs are little impacted by industry's product or service.

Most sources of buyer power apply equally to consumers and to business-to-business customers. Intermediate customers, or customers who purchase the product but are not the end user, can be analyzed the same way as other buyers, with one important addition: "*intermediate customers gain significant bargaining power when they can influence the purchasing decisions of customers downstream"* (Porter, 1979).

1.1.5 Threat of Substitution

A product or service can be defined as a substitute if its performance or its function is similar to that of the industry. The risk concerning substitution is defined by the fact that these products or services may be overlooked, appearing as different from industry's ones.

Limitation to industry's profitability is the main consequence of a high threat of substitution, generally imposing a ceiling on price levels.

The threat of a substitution is high if the price-performance trade-off proposed is attractive compared to the industry's offer and if customers face low switching costs.

In case of competitive discontinuities or changes in the technology used in what could be considered as unrelated business, the attractiveness of substitutes could increase in the eyes of customers, with consequences on focal industry profitability.

1.1.6 Rivalry Among Existing Competitors

The degree of competition among competitors of the same industry limits the profitability within the industry itself. The intensity with which competing companies compete and the basis on which they compete represent the factors over which rivalry has the potential to drive down industry's profit.

For what concerns the intensity, it is greater if:

- Competitors are numerous or are roughly equal in size and power;
- Industry growth is slow. Slow growth precipitates fights for market share;
- Exit barriers are high and keep companies in the market even though they may be earning low or negative returns;
- Rivals are highly committed to the business and have aspirations for leadership, especially if they have goals that go beyond economic performance in the particular industry;
- Firms cannot read each other's signals well because of lack of familiarity with one another, diverse approaches to competing, or differing goals.

Regarding the basis of competition, the dimensions on which competition takes place, and whether rivals converge to compete on the same dimensions, have a major influence on profitability.

Rivalry is especially destructive to profitability if it gravitates solely to price because price competition transfers profits directly from an industry to its customers. Price cuts are usually

easy for competitors to see and match, making successive rounds of retaliation likely and training them to pay less attention to product features and service.
Competition on dimensions other than price – on product features, support services, delivery time, or brand image, for instance – is less likely to erode profitability because it improves customer value and can support higher prices. Also, rivalry focused on such dimensions can improve value relative to substitutes or raise the barriers facing new entrants.
As important as the dimensions of rivalry is whether rivals compete on the same dimensions. When all or many competitors aim to meet the same needs or compete on the same attributes, the result is zero-sum competition. While price competition runs a stronger risk than nonprice competition of becoming zero sum, this may not happen if companies take care to segment their markets, targeting their low-price offerings to different customers.

In conclusion, industry structure, as manifested in the strength of the five competitive forces, determines the industry's long-run profit potential because it determines how the economic value created by the industry is divided – how much is retained by companies in the industry versus bargained away by customers and suppliers, limited by substitutes, or constrained by potential new entrants. By considering all five forces, a strategist keeps overall structure in mind instead of gravitating to any one element. In addition, the strategist's attention remains focused on structural conditions rather than on fleeting factors.

1.1.7 Factors, not Forces

In 2008, Porter published a revision of his model answering to other researchers that highlighted how the complementors were gaining a central role in companies' economic life, claiming to consider them as proper force that should be included in the framework.
The author identified four features that may usually mistakenly confused with forces, but that, in his vision, need to be considered as factors contributing to the competition in an industry but that do not constitute its underlying structure (Porter, 2008). These four factors are industry growth rate, technology and innovation, government and complementary products and services. The reason why, in Porter's mind, they should not be considered as forces is explained below:

- *Industry growth rate*: it is true that growth can mute rivalry, but most of the change it brings impact the strength of the competitive forces.
- *Technology and innovation*: Advanced technology or innovations are not by themselves enough to make an industry structurally attractive (or unattractive);

- *Government*: Government involvement is neither inherently good nor bad for industry profitability. Even here, the specific policies imposed by the government should be analyzed based on the impact they have on the five competitive forces;
- *Complementary products and services*: Complements, like government, are not deemed to be a sixth force determining industry profit potential since the presence of strong complementors is not necessarily bad or good for industry profitability. In fact, complements affect profitability through the way they influence the five forces.

1.2 Critiques to Porter's Framework

The five forces model of competitive advantage proposed by Michael Porter posits a compelling view on how a firm can achieve competitive advantage in a particular industry by leveraging on five imperative forces of the industry. For more than four decades his framework has been a powerhouse under the models studied in strategic management.

Porter's framework has been attractive due to its simplicity to understand but also to implement. The game between acquisition and positioning is easy enough to implement (Aktouf et al., 2005). Therefore, many strategists, consultants and firms have been able to work with and to attract others to the Porterian view of competitive advantage.

It focuses on an external analysis, moving away from the traditional SWOT approach, enabling a firm's focus to gravitate on its reaction to a change in the external environment and it is also very inter-linkable with other models that help in understanding and leveraging on dynamism, such as the PESTEL analysis (Goyal, 2020).

Grundy (2006) stated that the five forces framework shows how competitive rivalry is the central idea and is very much the function of the other four forces, as the other four forces affect the industry and therefore even the competitors. Moreover, the same author affirmed that the model went beyond a more simplistic focus on relative market growth rates in determining industry attractiveness.

However, up to this day very few academicians have actually taken Porter's Five Forces model under the lens in a critical way. Only a few attempts have been made to further develop this model (Grundy, 2006). In the era of hypercompetitive and rapidly growing industries and business environments, it is believed that the model needs a reshape. The major flaws of the framework are identified in the next sections.

1.2.1 An Abstract Model

Porter's model became a central node of texts on business strategy and strategic management, and essential examination material on economic courses globally. Nevertheless, Grundy (2006) stated that: "Porter's model, whilst it has done extremely well in occupying textbook space, does not seem to have captured the imagination of other theorists, […] it seems to have become, as it were, frozen in time".

In his paper, Grundy stressed how today, after more than forty years since his publication, there is still little real awareness among mainstream managers at senior or middle level of Porter's original concept. It could be estimated that between 15% and 20% of attendees on strategic management courses are familiar with the framework, while just 5% have actively used at an explicit, analytical level.

Interestingly, if this is compared with the awareness level of basic SWOT analysis, a crude estimate is of 90–95 percent awareness and at least 50 percent active use. Whilst Porter was propelled to fame on the back of this and other intellectual advances, it seems an odd, if not disappointing, phenomenon that this original breakthrough has had somewhat little currency amongst practising managers.

What can be derived from the studies of Grundy (2006) is that the model is relatively abstract and highly analytical. Moreover, it seems to be highly perspective and somewhat rigid, leaving managers and teachers in business schools inhibited from being innovative and flexible in their application of the concept. In this sense, Porter assessed each of the forces in relation to micro-economic theory rather than in terms of practicalities. In fact, the model helps to simplify micro-economics. However, its visual structure is relatively difficult to assimilate, and its logic is somewhat implicit. Managers tend to like analytical concepts spelt out in very simple terms, otherwise they find it difficult to adapt to their default, fluid strategic management style. About this flaw, Collis and Rukstad (2008) stated: "there is no point doing any work on strategy if workers are not able to verbalise it and, as a result, act in line with it".

Grundy (2006) went on by emphasizing that Porter's work tends to over-stress macro analysis at the industry level instead of the analysis of more specific product-market segments at micro level. It also oversimplifies industry value chains and fails to link to actual management actions that managers would have to take in case companies have little to now influence of the five forces.

1.2.2 A Static Model

Another weakness of Porter's five forces model is that it is static in its composition. In fact, it provides a snapshot of the wider industry at some point in the past that can be useful in providing information for the short-term strategy planning, but the window of applicability for the information coming out of the model has also been narrowed by rapidly evolving external factors. In other words, in the modern-day, that is writhe with dynamism and constant changes, the model does not provide any further advantage (Beattie, 2021).

To solve this problem, one could think to use Porter's original concept along with other useful tools such as PESTEL framework, used to analyse and keep monitored the macro-environmental factors (Political, Economic, Social, Technological, Environmental and Legal) that may have an impact on an organisation's performance, or a SWOT analysis. In this way, a clearer understanding about the estimated dynamism and the situation could be obtained, but most of it would be the controlled by the auxiliary tools (Grundy, 2006).

Merchant (2012) wrote that most of the existing big organizations, so called "800-pound gorillas", that could rely on their size as their main power to keep a competitive advantage in capital intensive markets subscribed to Porter's framework. But in a situation where the capital requirements to enter markets have declined, the marginal cost of reaching consumers is effectively zero, and one-off production in hard to do (situation that could be found in the digital era), being big offers smaller advantage than it used to. In such situation, as nowadays, where the customers demand for customized products and experiences that can hardly be the result of scale processes, firms need to be "fast, fluid and flexible". This latter type of organisations, called by Merchant "gazelles", out-maneuver the "800-pound gorillas" and they need a model in line with the characteristics of their market.

The static issue was identified also by Dulcic et al. (2012), who suggested that the dimension of time dynamics should be brought into the Porter's framework in order to become more practical from the perspective of changing environment trends, enabling managers to get clearer insight in the existence and nature of past, present and future interaction between a firm and its industry structure components (see Figure 2). By taking into respect actual dynamism of global economy as well as potential eligible impact coming from positive effects of industry factors, the model could be empirically improved. At the same time, making the framework potent to measure both positive and negative influences of industry structure's determinants on firm's performance, it would be possible to capitalize on potential positive interrelationships.

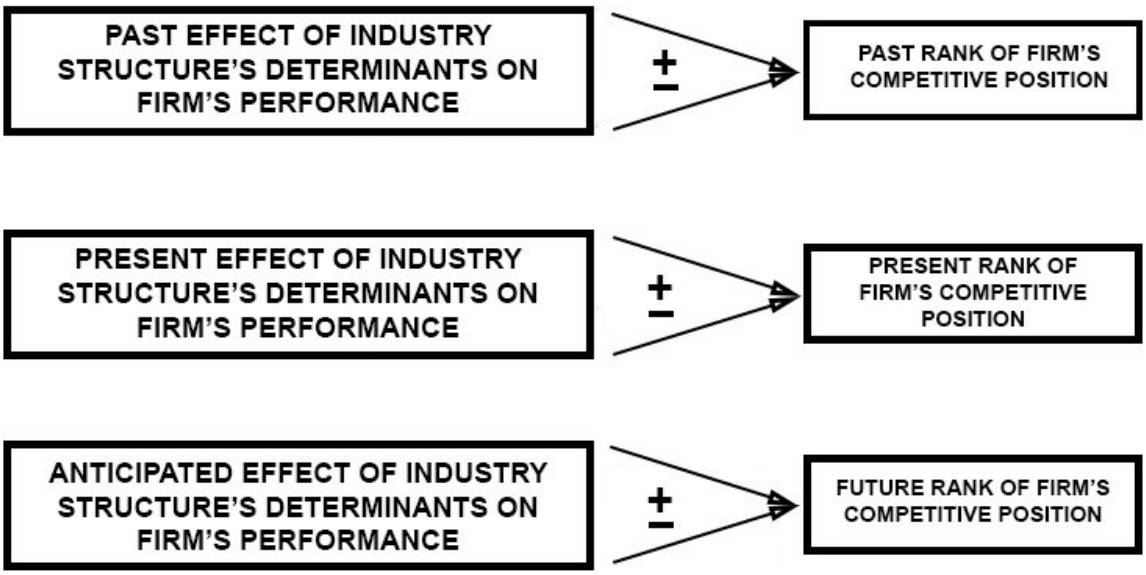

Figure 2 - Empirical framework for assessing dynamic industry structure-firm interrelationship (Dulcic, 2012)

Finally, Grundy (2006) stated that Porter sticks to the mindset that industries are entities with ongoing boundaries but in today's business context it seems less appropriate, since boundaries within industries seems to appear more fluid, and therefore also those among the forces of the model themselves.

1.2.3 The Model Lacks in Keeping the Competitive Advantage

Another pitfall is that Porter's model is not a model that adheres to the sustainability of competitive advantage. It is a model rooted deep in the industry-based-view of modern-day strategic theory, but like a lot of models of this view, the five forces model only enables a firm to attain competitive advantage, not maintain it (Goyal, 2020).

This flaw, however, is overcome by other models of the Resource-Based-View that provide alternative frameworks. Compared to Porter's strategic development that starts at looking at the position of a firm in a specific industry, the RBV states that firms are able to earn higher profits if they can maintain and manage their own resources. The most influential of all the RBV frameworks is the VRIN introduced by Barney (1991), later improved in VRIO (Barney, 1995), stating that in order to achieve a sustainable competitive advantage, a firm must control a resource that:

- Adds value by enabling it to exploit opportunities, defend against threats or help organizations to increase the perceived customer value (*Valuable*);
- Can only be acquired by one or very few companies (*Rare*);

- Due to historical conditions, casual ambiguity or social complexity, cannot be imitated, bought or substituted at a reasonable price by other firms (*Inimitable or Costly to Imitate*);
- Are organized by a company in a way to exploit their potential (*Organization*). In fact, once the analyst has realized the value, rarity and imitability of the company's resources and capabilities, the next step is to organize the company in a way to exploit these resources. If done successfully, the company can enjoy a period of sustained competitive advantage. There are many components to this question of organization. They include, but are not limited to, the company's formal reporting structure, management control systems and compensation policies, that together are known as complementary capabilities and resources because alone they do not provide much value. However, in combination with a firm's other resources and capabilities, it can result in sustained competitive advantage. Without the correct organization, even firms with valuable, rare and costly to imitate resources and capabilities can suffer competitive disadvantage (Barney and Hesterly, 2010).

It is questionable why Porter has not involved RBV and or internal forces such as entrepreneurship as the source of competitive advantage in his model when he updated his five forces framework in 2008. Given the fact that Porter comes from a different school and way of thinking, it might be obvious why he has never intended on updating his point of view on competitive advantage.

1.2.4 Digital Strategy and Missing Forces

According to current literature, Porter's five forces model seems to be outdated and in need of a refinement. Kim et al. (2004) for instance questions applicability of the renowned model in the digital age. It is obvious that when Porter developed his model it happened during a different business context, which Kim et al. (2004) called the brick-and-mortar firm context, compared to today's business context, which is digitized.

The topic is further deepened by Downes and Mui (1998). According to these two authors, the framework is largely unsuitable to build digital strategy since in his original model, Porter did not believe that most industries have or will soon enter a new era of competition in which none of the old rules would work. In fact, for Downes and Mui (1998, p.61): "every industry is going through a revolution in its use of information technology […] with factors such as the growth

of technology and capabilities that firms have in terms of resources, personnel skill and technological innovation, industries and especially the IT represented a big disruptive burst".

	Strategic Planning	*Digital Strategy*
Nature	Static	Dynamic
Environment	Physical	Virtual
Discipline	Analytical	Intuitive
Time Frame	3–5 years	12–18 months
Key Pressure Point	Five forces	New forces
Key Technique	Value chain leverage	Value chain destruction
Participants	Strategists, senior management	Everyone (including business partners)
Technology's Role	Enabler	Disrupter
Output	Plan	Killer apps

Table 1 - Strategy planning vs digital planning (Downes and Mui, 1998)

Digital strategy, as Table 1 suggests, departs in many key respects from traditional strategy work. The foremost difference is the role played by technology itself which has become and will remain the essential disrupter of current operating models, representing in this way the origin of business change.

Other important differences identified by the authors between old and new approaches to strategy in light of the digital era are the static nature of old strategic plans versus the dynamicity required by digital planning and the time frame, which is usually equal to three to five years for traditional strategy work versus a shorter time horizon for the digital one (close to twelve to eighteen months),

Surrounding the original five forces identified by Porter, Downes and Mui (1998) suggests other three new forces: digitization, globalization, and deregulation (see Figure 3). These forces, generated by the interaction of digital technology and Coasean economics, exert tremendous new pressure on the competitive environment, superseding the old forces as the focus of planning.

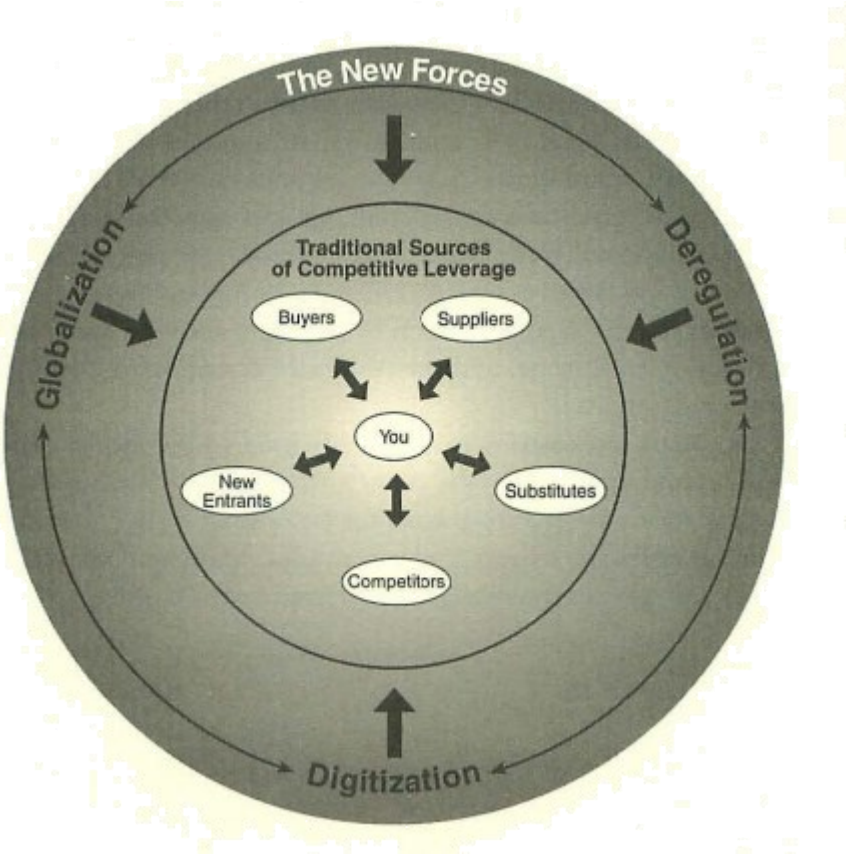

Figure 3 - The new forces (Downes and Mui, 1998)

For what concerns *digitalization*, it has become obvious that most of the information is being handled electronically, meaning that the access to the competitors, suppliers and customers information is increasing. In this sense possibilities to collaborate and compete have also become available, disrupting in this way most of the industries. The use of internet and digital media has become a component and a force of almost every organization aware of the advantages of this tool. Consequently, dealing with new and unknown competitors and partners in new markets will become easier to collaborate with even before you know them. The same Porter demonstrated how internet affected competition's forces, resulting in low barriers to entry and reduced differences between competitors and potential competitors. He also fences that competition's fundamentals have not been modified, although new means of conducting business have arisen and the possibilities offered by the Internet are included in the products and activities (Porter, 2001).

The term *globalization* has shown to be very popular for those looking for reliable, cost efficient and easy to use products. The information to and about global sourcing is related to digitization, and this allows easy access to globalization from almost anywhere. It has become easier to

manage larger number of suppliers and buyers because the globalization process is speeded up through information technology and digitization. This factor is stressed by Flower (2004), who stated that the world is quickly shifting into a large network that offers undeniable opportunities. Over a short term of period many local and smaller firms have become global companies due to better logistics and communication through digitalization. The opportunity to shop and transport without any border "restrictions" due to deregulation and digitalization has attracted customers from entertainment to software to cars and electronics. In the finance sector as well as manufacturing, the fact that most of the operations are time-sensitive, digitalization and globalization has allowed companies to manage their processes 24 hours long.

Most importantly, globalization also drove an increased competition, which in turn had an impact on all the five forces of competition defined by Porter. Bang and Markeset (2011) in their literature study stated that: "The main drivers of economic globalization that affect the competitive situation are identified to be: lower trade barriers; lower transportation costs; lower communication costs; ICT development; and the spread of technology […] These have a number of effects on the five competitive forces that are grouped into the areas of size, location and pressure".

Entering more in detail, each of these drivers influence the five forces' model in a specific fashion:

- Lower trade barriers affect the geographic barriers, both in opening toward similar market segments and their internal competition, but also toward the other potential threats those markets might have, resulting in a fading away of the boundaries around the industry competition;
- Lower transportation cost increases sourcing opportunities within the industry, resulting in an increase of supply options both for buyers and suppliers;
- Lower communication costs knit parties of the different forces together and reduce the benefits of previously limited knowledge;
- The developments within information and communication technology further level the playing field and reduce the benefits of being an established player in the industry. It becomes more difficult to have unique knowledge of market potential, production techniques, methods and industry profitability (Freidman, 2005);
- The spread of technology, intended both as ICT and manufacturing technology, further enables all of the parties to enter the competition. For existing industries players, this may no longer mean limited access to the manufacturing technology.

All these drivers, as pointed out by Bang and Markeset (2011), result in three separate effects on the forces of the model. First, the size effect coming from the fact that, as the barriers to enter the competition's arena are reduced, the potential rivalry includes players of previously separate markets, now integrated into one.
Then there is the location effect, as a consequence of the fragmentation of value chains, offshoring, outsourcing and complex supply chains that adds new dynamics. Citing Mudambi and Venzin (2010): "The distribution of value creation among individual value chain activities is not static […] it "travels" in terms of location and control".
Last but not least, the pressure effect, which is the sum of the competition that speeds up resulting in a closer mutual interrelation among all the forces.

Finally, nowadays governments withdraw from business areas and the outcome is an increasing *deregulation*, which could be described as the removal of controls raised by the government on the operation of industries.
During the process of liberalization, residual risk is dissolved and thus allows a restructuring of the affected areas. In industries such as the airline, communications and banking actually reflect this kind of preference really well. In terms of attractiveness, it could be said that the open market is definitely more attractive as it is easier for instance to adopt IT in an open market compared to industries controlled by regulations and rules. This in turn also leads to companies shifting towards heavy outsourcing and restructuring of their businesses. In addition, governments have by now realized that in order to be profitable, a country's economy has to become more global and therefore regulations need to be loosened. Therefore, many companies that have been protected under the regulations have now decided to shift their strategies heavily towards information technology and make use of this new opportunity. This in turn leads to a new dynamic market that is constantly changing at a fast pace as new disruptive companies have realized their potential in the IT field.
To better understand the impact of deregulation, the next part comes with an example of the airline industry brought by Shokeen (2016). As a matter of fact, the airline industry started its deregulation process back in 1978 in the USA and since then the players had to change their strategies in order to face the new competitive environment. The main implications were a strong development of the 'hub-and spoke-system', tougher competition among the existing competitors, and decreasing prices. Furthermore, most airlines were owned by the government itself, leading in this way to a lower intensity of competition among existing competitors. This

situation brought direct impacts to the forces defined by Porter, as stressed by Shokeen (2016): "Before the deregulation process there was no Bargaining Power of Buyers because of only a few alternatives to travel. The Threat of Substitutes Products / Services was high due to the competition of train, car or bus. The order of aircrafts depends on the airline nationality. Due to the Deregulation Agreement, the entry barriers disappeared and new airlines, predominantly low budget airlines, were entering the market. Thus, the competition between the existing Competitors increased".
The deregulation led to number of benefits to customers, who had more alternatives to travel and cheaper the ticket prices because of price wars among competing airlines. But it also led to decreased profitability to due the fact that airlines could anymore set their own prices and increased competition.

With the implementation of the three new forces, the framework is now to be considered more dynamic. Downes and Mui (1998) stresses out that the capabilities of technological progress where there is almost no limit, leads to the fact that even a strong market analysis and study will not be able to foresee all potential entrants or substitutes that can disrupt a market or industry over night. Obviously, organizations would have to adjust the way they do business and think about these new dynamic elements. Downes and Mui (1998) also mentions that a manager has more options to influence a competitive force. Looking at the way Porter was trying to explain the competitive forces, it was more of a death match of a positioning game versus other competitors in the market. Today it is more important to form co-operations, share knowledge and learn from each other by partnering up, creating strategic alliances or sharing common standards.
This suggests that the complementors should be added as another force to the original Porter's model. An in dept analysis will be dedicated to this specific force later in this chapter.

1.3 The Role of Complementors

The Porter's model that has been discussed so far aims to determine the attractiveness of an industry based on the five forces mentioned above. But at a time when increasing numbers of companies are focusing their businesses on the areas in which they have a distinct advantage and growing more dependent on third parties to create complete solutions for customers, those

five forces cannot explain by themselves how to gain a strong position in a market (Yoffie and Kwak, 2006).

Porter, in his 2008's revision of the framework, stated that: "complements can be very important when they affect overall demand for an industry's product but […] they are not a sixth force determining industry profitability since the presence of strong complementors is not necessarily bad or good for industry profitability".

Despite this, plenty of researchers pointed out that complement product, together with suppliers and customers, are partners with potential up or down vote on the success of a firm. In fact, companies that independently provide complementary products or services to mutual customers plays a vital role. For this reason, for many authors, *complementors* are deemed to be the sixth force in Porter's model and the quality of relations with complementors can determine the degree to which a new product succeeds or fails and even whether a company thrives or dies (Yoffie and Kwak, 2006).

1.3.1 The Concept of Co-opetition

> "*If business is a game, who are the players and what are their roles? There are customers and suppliers, of course; you wouldn't be in business without them. And naturally, there are competitors. Is that it? No, not quite. There's one more, often overlooked but equally important group of players – those who provide complementary products and services […] that can make the difference between business success and failure*" (Brandenburger and Nalebuff, 1996).

To support their idea, the two authors brought as evidence the example of the airplanes market that the same Porter later resumed in his 2008 publication, claiming that, as pointed out by the latter, there is a huge power held by key suppliers such as Boeing but, even if airlines compete both for airport facilities and customers, they are actually complementors with respect to Boeing. In fact, when airlines companies decide to commission the next-generation airplane, it is much cheaper for Boeing to design a new plane for both airlines together than to design a new plane for each of them separately since most of the development costs can be shared and the greater the demand, the faster will move down the learning curve for the supplier.

To strengthen this concept, they used the word "coopetition" coined for in the early nineties by Ray Noorda, founder of the networking software company Novell. It suggests a new mindset to use in business that combines for a more dynamic relationship than the worlds "competition" and "cooperation" suggest individually. The meaning of this word is that in business it is

cooperation when it comes to creating a pie and cooperation when it comes to dividing it up, challenging in this way the view of business as a war where fighting to death competitors often means destroy the pie and lose-lose situations.

1.3.2 The Value Net

After having ascertained the vital role played by complementors and the concept of co-opetition, Brandenburger and Nalebuff built a schematic map they called "the Value Net" in order to keep track of the players involved in the game of business and their roles. It shared with Porter's model the goals of having a complete picture of the industry a company is in to find a position where it can suit best and to influence the other players in its favor but including also the complementors (see Figure 4).

Moreover, by exploring the roles of all four types of players – customers, suppliers, competitors, and complementors – and the interdependences among them, it can be avoided the bias of blind spot created by focusing on one type of player or one type of relationship. In this way, taking in the wider picture, it is possible to reveal many new strategic opportunities.

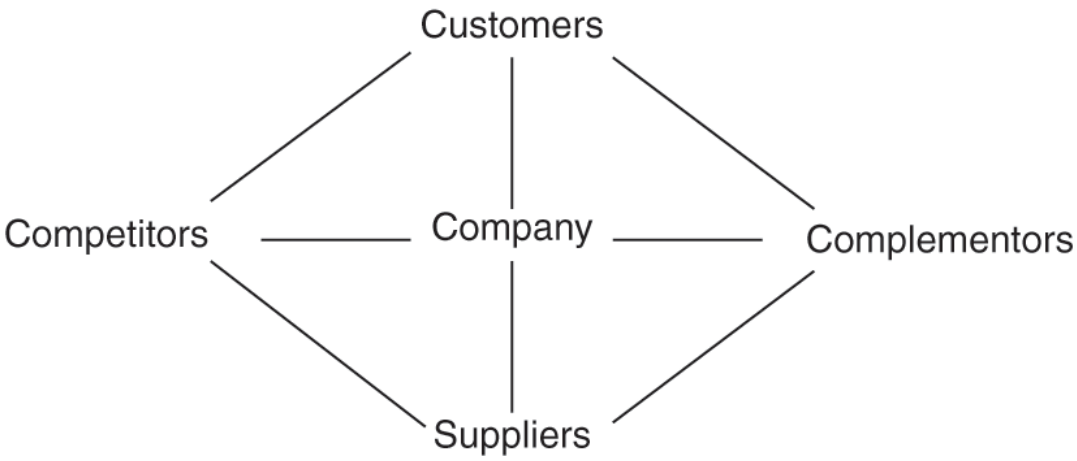

Figure 4 - The Value Net (Brandenburger and Nalebuff, 1996)

There are two dimensions of the Value Net: the vertical dimension, which takes into account customers and suppliers, and the horizontal dimension, which considers company's competitors and complementors.

For what concerns the first one, resources such as raw materials and labor flow from suppliers to the company, and products and services flow from the company to its customers. Money flows in the reverse direction, from customers to the company and from the company to suppliers. Just as with customers, there are two sides to the game with suppliers. As introduced

before in the example of airlines companies and the airplanes' suppliers, other players can complement you or compete with you in attracting suppliers' resources. So, a player is a complementor if it is more attractive for the suppliers to provide resources to a company when it is also supplying the other player and, by the same coin, a player is a competitor if it is less attractive for a supplier to provide resources to a company when it is also supplying the other player.

Along the second dimension, Brandeburger and Nalebuff (1996) defined a player as a complementors if the value for a product is higher for the customers when sold together with theirs, whereas competitors can be defined as such if their product reduce the customer's value of a product. The traditional approach defined competitors as the other companies in an industry – those that make products or services similar to yours in a manufacturing or engineering sense. As people think more in terms of solving their customers' problems, the industry perspective is becoming increasingly irrelevant. Customers care about the end result, not about whether the company that gives them what they want happens to belong to one industry or another. Thus, in order to identify the competitors, the authors suggested to put in the customer's shoes and the same is true for complementors.

The Value Net reveals two fundamental symmetries: on the vertical dimension, customers and suppliers play symmetric roles and they can be considered as equal partners in creating value, whereas in the horizontal dimension, competitors and complementors play mirror-image roles, since the only difference between them is that where it says 'more' in the definition of complementor, it says 'less' in the definition of competitor.

It is easy to focus on one part of the business and miss the others and so the Value Net is designed to counter this bias by depicting all four types of players you interact with and emphasizing the symmetries between them.

1.3.3 Playing Multiple Roles

The presence of the complementors in the Value Net is not the only distinctive trait of Brandenburger and Nalebuff's model with respect to Porter's Five Forces framework. In fact, there is a vital and useful idea for nowadays way to do business which Porter did not include in his model: the possibility for the players within the model to play multiple roles.

The authors depicted the game of business as different from other games for different reasons such as it allows for more than one winner, but most of all the game does not stand still and all the elements in the game are constantly changing. This means that people playing the game does not have to follow some rules, they are free to do whatever they want. This also makes the

game more complicated due to the fact that sometimes a player who is apparently occupying one position could actually take on multiple roles. And the opposite is also true, a player that seems not to fit in any particular position could actually play two or more roles simultaneously. Therefore, the position in the Value Net merely represents a role someone plays, and the same player can have multiple roles. It is counterproductive to typecast someone as just a customer or just a supplier or just a competitor or just a complementor, and the next chapter will be dedicated to the identification of the latter.

This concept is clear in the example of competing airlines complementing each other when it is time to commission a new plane but, as Porter did, people are so accustomed to viewing the business in warlike terms that even when other players are both competitors and complementors, they tend to see them as only competitors and fight against them. They focus on the evil Mr Hyde and overlook the good Dr Jekyll (Brandenburger and Nalebuff, 1996).

This perspective leads to suppose that when customers buy a product, they are less likely to buy others. Or that when suppliers provide resources to someone, they are not willing to supply others. It is 'either-or' mindset stemming from trade-off mentality where no one can have it all. But it fails to take account of complementors, those who enable a customer to enjoy more of a product if bought together with another one or a supplier more willing to provide resources to others. There is a big bias toward seeing every player as a competitive threat when in reality many players complement and compete simultaneously.

This feature explains what otherwise appears to be strange behavior such as competing businesses locating right next to one another, the so called "bunching effect". In some cases, it helps creating a bigger market for suppliers (think of Silicon Valley in California as an example) as well for customer (for example, it is comfortable to have a bunch of ethnic restaurants to choose from when walking down to Paris' Latin Quarter). So, it can be said that companies are complementors in making markets and competitors in dividing them up.

After this discussion, a question arises: who should be considered a friend and who a threat in the game of business? It could sound as an easy question: customers, suppliers and complementors are friends and competitors are not, but this is not quite right.

Along the vertical dimension of the Value Net there is a mixture of cooperation and competition. It is cooperation when suppliers, customers and more in general companies come together to create value in the first place but, at the same time, it is competition when that value, the metaphorical pie, has to be divided up. In fact, customers press for lower prices and suppliers try to grab as much value as they can.

For what concerns the horizontal dimension, when a complementor enters the game, the pie grows, resulting in a win-win situation. But then there is a tug-of-war with the complementor itself for who is going to be the main beneficiary. For a competitor, the relationship should be clearer. But the idea that it is always war with competitors is overly simplistic and leads to win-lose approach. An alternative is to find win-win opportunities even with competitors, extracting the most out of the situation. The relationship with competitors is prima facie competitive or win-lose since there is always something to lose as they enter the game. But once realize that they entered, it is not always war with them. Rather, it is war and peace, and the same is true in all four directions, no one can be trusted as purely friend or threat since there are both win-win and win-lose elements in the relationship with customers, suppliers, complementors and competitors.

1.4 Conclusions

In this chapter, the two models have been presented which, together, form the theoretical basis on which this thesis rests.

The first model presented is that of Porter's five competitive forces, first published in 1979 and which represents a bulwark of the literature concerning corporate strategy. Subsequently, the model was revised by the same author due to the criticisms to which the framework had been subjected, especially regarding any missing forces, which the same author defined as "factors, not forces" (Porter, 2008) that contribute to the competition within an industry, but which should not be confused with its underlying structure. These "factors" also include complementary actors, whose role as a force was instead assigned and ascertained for the first time in 1996 by Brandenburger and Nalebuff, who for the first time introduced the concept of "Co-opetiton" that arises by the presence within a competitive landscape of those actors that for the first time were called “complementors”. These players have a double effect, a cooperative one, capable of increasing the market, and a competitive one, increasing competition for market share. In particular, this last effect, whose literature is less developed than the cooperative side, will be the focus of this thesis. In the following chapters, in fact, recent theories will be explored which see complementary players as possible disruptors for a given strategic landscape.

CHAPTER 2 – COMPLEMENTORS: FRIENDS OR FOES?

Once the revision of the main literature regarding Porter's model and its pitfalls has been addressed and the main theory affirming the complement actors as the sixth force in the aforementioned model has been quickly presented, the following chapter will dig deeper in the literature about complementors and their role in the competitive arena.
Specifically, by bearing in mind the precious insights of Nalebuff and Brandeburger theories about the importance of complementors in the competitive ecosystem, their Value Net framework and the concept of the metaphorical pie growing as a complementor joins the landscape, this section aims to highlight the less detailed side enunciated by the two authors, namely that of the competition with complementary players once the pie is getting bigger.
In order to do so, there will be a brief discussion about how to differentiate a complementor from a supplier. Once a definition has been found, concepts will be drawn from the value creation literature to give some expected consequences regarding what the relationship between a focal firm within a given industry and a complementary player may be.

2.1 Complementors and Suppliers: Similarities and Differences

In the closing of the previous chapter, complementors were introduced as conceived by Nalebuff and Brandeburger and their idea of Value Net, in which a company can encounter four types of relationships that cover the overall portfolio of a focal enterprise:

- Supplier: provides a critical offer for the focal firm function, which means that the latter's offer could not function or be considered complete without the supplier's contribution;
- Customer: obtains the offer from the focal enterprise;
- Competitor: decreases the value of the focal enterprise offer;

- Complementor: increases the value of the focal enterprise offer.

This logic scheme is certainly useful for getting to know the various players who take part in the "Game of Business", but it is not very helpful when you have to try to understand what the precise roles are within the game itself.

Specifically, for the focus of this dissertation, it is necessary to try to find a way to uniquely differentiate the suppliers from the complementors, although these two actors can sometimes play a role that may seem similar or even have the same player play both roles towards a particular company. To do this, it is first necessary to understand what the similarities are and what the differences are between these two roles.

The literature on relationships with complementary actors indicates that the role of such players is gaining more and more importance (Adner and Kapoor, 2010; Boudreau, 2008, 2010). In order to create complete offers for customers, companies increasingly have to rely on offers made available by other actors (Katz and Shapiro, 1985; Schilling, 2003). Companies must address the adaptation and bundling of these complements with their own focal innovations, as the value to customers depends on the whole system.

At the same time, companies increasingly depend on suppliers to cope with growing technological complexities and specializations (Pittaway, et al., 2004). In general, the value of suppliers in the innovation process is very high and the integration of suppliers into the focal enterprise business processes has been recognized as one of the main factors leading to innovation beyond borders (Kaufmann and Todtling, 2001; Lincoln, Ahmadjian, and Mason, 1998; Ragatz, Handfield and Scannell, 1997). Suppliers are therefore key players in providing a company with the essential components and resources to tap into and possibly maintain a competitive advantage.

Drawing on the innovation's literature stream, it can be seen how the success of innovation therefore depends on the position of the reference company with respect to its competitive scenario. Where suppliers are in the upstream activities of the focal enterprise value chain and complements downstream, Adner and Kapoor (2010) show that innovation if carried out with upstream actors improve the benefits that come from technology leaders, while if carried out with downstream innovation erodes these advantages. The example given by the two authors is that of the super-jumbo aircraft of Airbus, in which the suppliers of the leading avian transport company have faced great challenges in the design of new engines and more powerful hydraulic systems, providing important contributions to make the airplane "technologically feasible" (improvement of technological advantages), while the airplane could have become a success

only if other actors (such as airports, regulators and simulator manufacturers) were able to create an adequate infrastructure for the introduction of this new model of plane (erosion of technological benefits).

Furthermore, Yoffie and Kwak (2006) argue that "firms base most strategic choices on in-depth analysis of competitors, suppliers or customers, but hardly investigate common interests with complements". The distinction among a complement and a supplier is not straightforward. Indeed, both players bring customer value to the focal firm offer, even though this is conceived as a supplier's primary task. This problem is blown up by the use of a wide variety of closely related supplier roles (e.g. scientific partners, co-suppliers, consultancy firms, distributors). This results in ambiguity in how the term “suppliers” is used, especially in those cases where the supplier is actually a complement. By deepening the discussion, it can be proved that there are substantial differences within the two roles.

In terms of the overall relational structure, suppliers are part of the supply chain, where they play an important role in providing the firm with inputs that turn into outputs but do not have direct business with the focal firm's customers. Conversely, complements are part of other affiliated value chains. They are affiliated because value chains come together with a common customer and the related offerings solve a need more "completely" (Habets, 2012). Therefore, as stated by Brandeburger and Nalebuff (1996), suppliers are to be considered as vertical relations, while complementariness as horizontal relations.

In terms of relationship functions (production, innovation, creation of new value, etc) Habets (2012) argues that suppliers provide bundled offers upstream from the focal firm and complements produce bundled offers downstream from customers. A supplier offers components while a complement offers complements (Adner & Kapoor, 2010) or complementary goods. Suppliers help improve the "standalone" benefits of an offer, while complements - offering complementary goods - help improve the complete solution for customers (Habets, van der Sijde, von Raesfeld and Groen, 2010).

2.2 Establishing a Complementor Definition

Once the similarities and the differences between supplier and complementor are understood, it is time to give a definition to the latter class of actors that can uniquely distinguish them with respect to the class of suppliers.

There are few definitions of complementor that can be found in the literature, each of which reflects the greatest concept that the author who enunciated it wanted to investigate (see Table 2).

	Complement Definition	**Author(s)**
1	"A player is a complementor if customers value your product more when they have that player's product than when they have your product alone".	(Nalebuff & Brandenburger, 1996, p. 31)
2	"Relationships with complementors: Firms develop relationships with many other types of firms whose outputs or functions increase the value of their own outputs".	(Ritter, et al., 2004, p. 177)
3	"A customer may also need to bundle other offers alongside the focal actor's product in order to utilize it. We refer to such offers, which are bundled downstream by the customer, as complements".	(Adner & Kapoor, 2010, p. 309)
4	"High tech firms often encourage suppliers of complementary goods to join their technology platforms in order to stimulate network effects".	(Boudreau, 2008, p. 1)
5	"Complementors are companies that independently provide complementary products or services directly to mutual customers".	(Yoffie & Kwak, 2006, pp. 89-90)

Table 2 - Complementor's definitions

Starting from the first definition already encountered in the previous chapter: "*A player is a complementor if customers value your product more when they have that player's product than when they have your product alone*" (Nalebuff & Brandenburger, 1996, p. 31), one can note how the term "value" is used. Although there are different types of value (relationships, activities, perceived), the one of reference in this definition is the value in the eyes of the consumer, emphasizing the customer value and specifying the definition itself. Habets (2012), points out that this definition also suggests an increase in value by offering an additional product over the product of the focal firm, thus placing the focus on supply rather than available resources. Finally, the definition mentions the "players", which can be understood as other companies. Nevertheless, following this definition, it is not possible to uniquely distinguish a supplier from a complementor.

Moving on to the second definition: "*Relationships with complementors: Firms develop relationships with many other types of firms whose outputs or functions increase the value of their own outputs*" (Ritter, et al., 2004, p. 177), it is possible to note that this definition stresses the value adding activity of complementors through additional output, such as a product or a service. However, it overlooks fundamental elements for the identification of a complementor such as value in the eyes of the consumer and, above all, the difference between supplier and complementary actor. In fact, even a supplier could increase the value of a given company's offer, thus causing ambiguity (Habets, 2012). An example of this phenomenon is the ingredient or component branding, a marketing strategy according to which the final product of a company is made through components of a well-known and appreciated brand on the market. In this way, the value of the company grows as its product seems to have a competitive advantage over the competition. Intel went from being a company with a strong reputation for its technical prowess and quality just among original equipment manufacturers (OEMs) in the 1980s, to be the world's most recognized and trusted brand of computer components among consumers without expertise in the tech field thanks to its "Intel Inside" campaign, launched in 1991. This marketing campaign was designed to be accessible to laymen, loading a simple logo with enough meaning to give non-techies an easy way to understand that a certain device contained quality components provided by the company that defined the state of the art. While Intel promoted the Intel Inside logo in ads of its own, the campaign depended heavily on a cooperative endeavour in which the company provided subsidies to OEMs who included the logo on their own products and ads, thus encouraging consumers to think about the processors inside the devices they bought and recognize Intel as a sign of quality and innovation. By the end of 1992, over five hundred OEMs had signed onto the cooperative marketing program and 70 percent of OEM ads that could carry the logo did so.

The next two definitions are less direct. "*A customer may also need to bundle offers alongside the focal actor's product in order to utilize it. We refer to such offers, which are bundled downstream by the customer, as complements*"(Adner and Kapoor, 2010, p. 309), is valid as it recognizes the Value Net as defined by Brandeburger and Nalebuff (1996), it places the right emphasis on the role of the customer, and it describes the focal actor but does not specify that these complements derive from complementary relationships. Furthermore, it states that the customer must group offers to use the product, which is not necessarily synonymous with an increase in the value of the product or complete service.

"*High tech firms often encourage suppliers of complementary goods to join their technology platforms in order to stimulate network effects*" (Boudreau, 2008, p. 1), identifies a specific

characteristic of the relationship with a complementor, that is the stimulation of network effects. Despite this, this definition states that the complementary actor is a supplier of complementary goods, when instead, according to the Value Net, those are different roles.

The definition that could best fit the similarities and differences found in the previous paragraph is the one of Yoffie and Kwak (2006): "*Complementors are companies that independently provide complementary products or services directly to mutual customers*". This definition does not identify and differentiate itself a complementor from a supplier, resulting in a quite tautological definition. It just shifts the focus from the actor offering the product or service to the product or service itself. In this context, a complementary product should be distinguished from a component and the main definition given by Milgrom and Roberts (1990) state that: "The defining characteristics of these groups of complements [with respect to components] is that if the levels of any subset of the activities are increased, then the marginal return to increase in any or all of the remaining activities rises". But even with this definition, not all the doubts are solved since improvements in either of these dimensions increase the attractiveness of the focal offer (think to the Intel Inside campaign example given before).

A clearcut definition about these topics is still a blind spot in the literature, but in this dissertation, the definition of Yoffie and Kwak is still the most suitable for the scope of the analysis followed, since it highlights the two characteristics that help differentiate the roles of supplier and complementor (Habets, 2012):

- A complementary actor does business directly with the customer, in contrast to the supplier who conducts business indirectly or through the focal firm (even if it is also true, but rare, that the complementor could interface to the final customers though the producer);
- The complementor and the focal firm share the same mutual customers.

2.3 Complementor's Role in Value Creation

After having defined and given a definition to the complementary actors that can differentiate them from the role of supplier, it is useful to investigate how these players can create value for a focal enterprise, in order to prepare the ground for the discussion regarding the impact on profitability.

There are three streams of literature that investigate how complementors can influence value creation (see Table 3). These three perspectives - economic, capabilities and marketing - provide distinct explanations regarding complementarities and the related value creation process, which sometimes overlap.

Perspective	**Value creation by**	**Type of value**	**Dominant unit of analysis**
Economic	Transactions with	Monetary	Meso, Macro
Capabilities	Resource combining	Unique / Strategic	Micro
Marketing	Relationship knowledge	Customer	Micro

Table 3 - Overview of the three perspective that explored how complementors affect value creation.

> "*The economic perspective analyses complementors as an efficient solution to the risks of economic transactions. The capabilities perspective places complementors in the context of competitive rivalry and resource sharing to enhance market power. The marketing perspective sees complementors as a vehicle by which organisational knowledge is adapted and exchanged to create customer value*" (Habets, 2012).

2.3.1 The Economic Perspective

The way in which transactions between different entities generate value, understood as monetary value and frequently referred to as economic profit, is the main node in the study of the economic perspective. It argues that external relationships are used by a particular company when that form of governance is more efficient than internalization. This is achieved under conditions of limited rationality, minimizing production and transaction costs and pursuing value by purchasing assets and resources (Parmigiani and Rivera-Santos, 2011).

The assumption on which this perspective takes its roots has been identified by the work of Joseph Schumpeter (1942), who recognized that markets are made up of supply and demand, identifying for a specific company that is part of a market both enemies with which to compete, and enemies from whose activity benefits can be extracted (Walley, 2007). Hebets (2012) considers these friends as the basis of their complementary role in creating value. The unit of analysis in the economic stream is not very concentrated at the micro level (relations between firms), but mainly at the meso (industries) and macro (economies) levels, thus determining the role played by complementary actors in creating value at high levels of analysis.

Another theory on which the economic perspective is based is the “Positive network externalities” (Katz and Shapiro, 1985), or the theory according to which the value for customers and the size of the whole system are positively correlated. It is one of the most notable economic theories that shows how value creation and complements go hand in hand (examples are telephone companies, gaming consoles and videogames, software and hardware). “Commodity Bundling” is another economic theory that examines the economic effects of firms selling their goods in packages (Adams and Yellen, 1976). Here it is believed that the prevalence of bundling stems in part from the savings in production, transaction and information costs associated with the sale of such packages and in part from the fact that companies dwell on complementarity in the consumption of bundled components.
Finally, the economic “Theory of Complementarity” (TOC) (Milgrom and Roberts, 1990) implies that, starting from a system of complementary variables which are independent and uncoordinated, a firm could become more profitable thanks to lower costs and higher returns if it deals with the creation of synergistic advantages between two previously uncoordinated activities.

2.3.2 The Capabilities Perspective

The capabilities perspective is the one that most resumes the concept of value expressed by Porter (1985), according to which "the value should be unique and lead to a lasting and sustainable competitive advantage". In other words, it derives from traditional strategic research that examines a firm's ability to manage and improve its competitive position relative to its rivals through combinations of resources capable of creating unique or added value. Many of the research forming part of this perspective recognises, albeit indirectly, the importance of the role played by complementary actors in making the portfolio of resources available and the consequent offer to the customer more unique. This work is usually concerned with the complementarity of resources to create business value and derives from the Resource Based View (RBV), which argues that resources are heterogeneous among firms and that true uniqueness of resources creates competitive advantage (Barney, 1991). Although the micro level of analysis is prevalent in this perspective, it is not always clear whether the complementarity comes from other companies, other products/services or another knowledge (Ennen and Richter, 2010).

2.3.3 The Marketing Perspective

The marketing view mainly considers how exchange between relationships creates (customer) value. The marketing perspective sees complementors as a vehicle by which organisational knowledge of shared customers is adapted and exchanged into valuable offerings. Traditional marketing research rose in the 1960s after firms noted the importance of demand pull instead of market push (Håkansson, Harrison, and Waluszewski, 2004). It stems from economic research but narrows value creation down to mainly customer value in buyer-seller relationships (micro level). Consequently, it seemed to have restricted itself in not looking at sources other than the buyer-seller relationship and has received more and more critiques from current marketing theorists. The Industrial Marketing and Purchasing (IMP)-school suggests that we should rethink marketing (Håkansson, et al., 2004). They specifically argue that the role of networks, and thus third parties like complementors, should not be underestimated. Value creation is now not the main task of the seller. The IMP School's research shows that distributors, suppliers, customers, end users et cetera. significantly contribute to these issues as well.

All the streams contribute to research on complementors and new value creation in their own specific way. Although, the economic, capabilities and marketing perspectives share several commonalities, they differ mainly in the objectives attributed to firms. The economic perspective argues that firms transact by the mode which minimises the sum of production and transaction costs. The capabilities perspective argues that firms acquire resources by the mode which creates value through improving a firm's competitive position. The marketing perspective argues that firms act to maximise relationship value, to satisfy customers' needs. In the context of redefine how complements affect the profitability of an industry, this means that the economic perspective may be useful in analysing problems within the process of bargaining with complementors, the marketing in maintaining and building sustainable complementor relationships, whereas the decision itself may stem from the acquisition of complementary resources to ensure a stronger market position (capabilities perspective).

2.4 How Complements Can Shift Profitability

After having investigated the main differences and similarities between the role of complementor and supplier, having given a definition of complementor and having highlighted how the latter can be distinguished from a supplier and identified the three main literary streams of reference for these actors, it is time to move on to a comprehensive analysis that allows us to understand how these players impact profitability as in Porter's model.

In recent years, the role played by complementary actors in value creation has started to occupy pages of literature (e.g., Adner and Kapoor 2010, Adner 2017, Jacobides et al. 2018, Kapoor 2018, and Teece 2018). To understand the impact on the profitability of a complementor and the relative role that this player can play within Porter framework, the following analysis will be based on the contribution of Adner and Lieberman (2021) on *disruption through complements*. This work can be inserted within the strand of literature previously defined as "Capabilities Perspective" as the two authors follow the idea of value as defined by Porter (1979), investigating how complements impact the competitiveness of incumbents within certain industries or markets that can be considered mature. The dynamics described will then be crucial to analyze and understand what the future implications of a market could be such as that of Mass Market Retailers (MMR, whose discussion can be found in the next chapter).

2.4.1 Threats to the Profitability and Market Share of Incumbent Firms

Ander and Lieberman (2021) identify four mechanisms that can lead to a decrease in the market share and profitability of incumbent firms (see Figure 5). These are loss of competence or internal disfunction, loss to existing rivals, loss to a substitute, and loss to a complement.

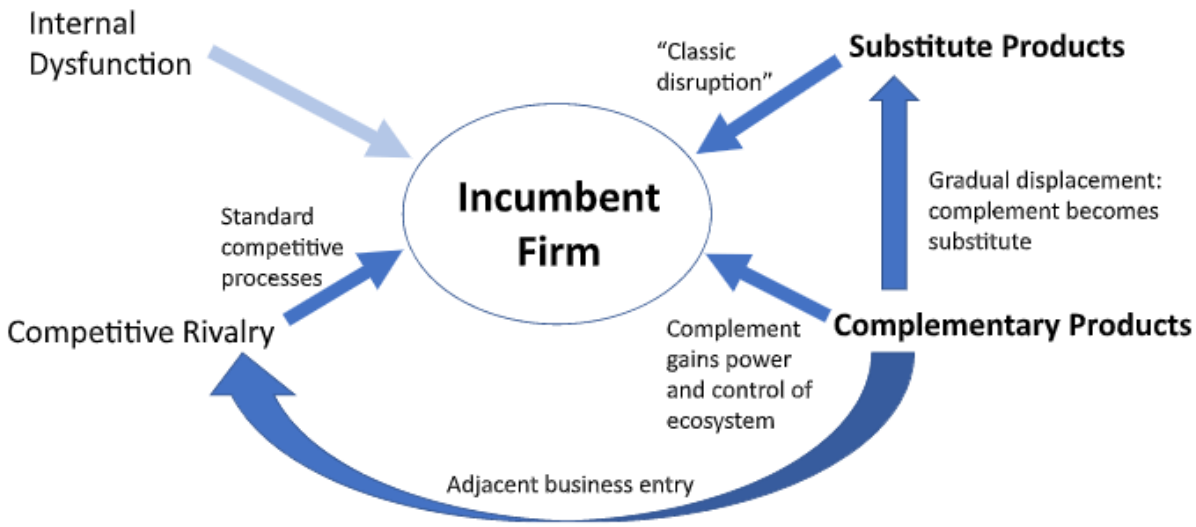

Figure 5 - Threats to the profitability and market share of incumbent firms (Adner and Lieberman, 2021).

The two threats on the left side of Figure 5 exist within the confines of an established competitive industry, which lies within and among the existing set of players. They have been extensively studied in the management literature and are generally considered separate from disruptions:

- Internal disfunction: A leading firm may lose market share and profitability as the result of destructive internal processes inertia, or organizational complexity that weaken its competitive position, independent of external threats (Haveman, 1993 and Dobrev et al., 2003). An example could be the Enron case, the energy company that not only faced one of the biggest bankruptcies in history but is also included among the biggest corporate scandals. The company was a true flagship of the energy sector. However, it was found that the company misrepresented its accountings and this brought to a $ 65.5 billion bankruptcy.
- Competitive rivalry: A firm may lose market share and profits to established competitors through standard processes of competitive rivalry. This occurs when established rivals improve their competitive position by cutting costs or by introducing superior products or services.

These two processes can work together; inertia makes the firm more vulnerable to competitive rivalry. Incumbent firms, succumbing to these threats, lose market share and profitability.

On the contrary, the two threats on the right side of Figure 5 come from outside the existing set of competitors and fall within the definition of disruption as given by Adner and Lieberman (2021): "*a substantial decline in the sales market share or profitability of established incumbents resulting from actions taken by firms that are not initially direct rivals of the incumbent(s)*". Thanks to this definition, therefore, we can place threats from substitutes, complements or new entrants within this category.

Following the definition given by Christensen (1997), a substitute can be defined as: "*An attacker introduces a substitute product or service that gains a foothold in the market. As the substitute improves, incumbents fail to adequately respond, leading to a substantial decline in their market share and profitability".*
There are three steams of literature that investigate disruption through substitution:

- The historical literature on technological change had through the 1980s, focused on the rise of emerging technologies that offered superior performance improvement over their predecessors, either immediately or eventually. Among this we can find radical versus incremental innovations (Cooper and Schendel, 1976) or competence enhancing versus competence destroying innovations (Tushman and Anderson, 1986);
- A departure from the assumption of superiority gave rise to a second strand in the literature: Foster's (1986) model of technology S-curves highlighted both the investment challenge associated with pursuing innovation that offered initially inferior performance and the risk to incumbents of waiting until the technology matured to the point where its superiority was established, at which point the attackers would be harder to outcompete, having gained both experience and market position with the new technology;
- Christensen's (1997) model introduced the novel idea that an emerging technology that would never offer superior performance could nonetheless takeover a market through the idea of a good enough performance, a notion that could come into existence when technological performance overshoots customer requirements.

For what concerns complement actors, the starting point to bear in mind is the Brandenburger and Nalebuff (1996) theory stating that complementors, through the coopetition effect, help to increase the market (or the metaphorical pie) but then compete with the focal firm in order to divide it up. Adner and Lieberman (2021) helped to further exploiting the concept of competing

with the complementors, stressing how they represent a different kind of threat, one that is latent within the initial structure of value creation: complementors that disrupt are not new entrants but rather established actors that can shift their impact from positive to negative. Here, the threat to the success of incumbents arises from complementors that initially play a value-enhancing role but ultimately displace a focal firm or capture much of that firm's profitability.

What Nalebuff and Brandenburger did not delve into is taken up by Adner and Lieberman, that is the role of complementors extends beyond enhancing joint value creation and impacting value capture, meaning that the value created by the incumbent diminishes — and can even be destroyed — despite the delivery of enhanced value to the end user.

An important stream of research has focused on the general question of how the nature of complementary assets (Teece, 1986, 2006) and the threat of holdup by partners (Williamson, 1985) affect the ability of innovators to profit from their own innovations. The emphasis in this paper is on the forces that impact the continuity of incumbent profitability and market share rather than the question of appropriating returns to innovation. Nevertheless, concepts coming from this literature stream such as bottlenecks that affect value capturing and the threat of being holdup could be used as starting point in order to understand the impact of complements on competition in the competitive arena.

As a matter of fact, these last two elements mentioned can change over time due to technological changes, strategic actions of the players and evolving capabilities. The contribution of Adner and Lieberman aims to show the dynamic process that turns "friends" into "foes" within the ecosystem of business, using the terms already used by Brandenburger and Nalebuff, which begins with positive relationships between incumbents and complementors, but soon turns into something more adversial. They identify three different processes by which disruption through complements can take place: commoditization, adjacent entry and value inversion. These three processes are shown in Table 4, as they are compared with the disruption through substitutes.

Form of disruption	Period 1 (predisruption)	Period 2 (postdisruption)
(1) Initially inferior substitute captures market share (*classic disruption*)	Incumbent technology A offers superior performance to new technology B: —For most customers, the value of A exceeds the value of B. —B enters a market niche. —A ignores B or fails to respond effectively.	• B improves to the point of replacing A in the main market by achieving good enough performance (e.g., Christensen 1997). • Replacement can be partial or total. **Impact: Core demand for technology A declines. Incumbents producing A may maintain market share in a shrinking market.**
(2) Complement drives down added value (*commoditization*)	• The offers of industry incumbents A benefit from the availability of complement B. • A is central and powerful. • Improvements in B increase the value creation of A.	• Complement B becomes the locus of differentiation and/or reduces barriers to entry to compete in A. • A loses uniqueness and holds a weaker negotiating position in the system, but it is not replaced: A and B continue to coexist. **Impact: Incumbent A loses margin, bargaining power, and influence. Demand for A does not change, but new entry can decrease market share of incumbents.**
(3) Complement enters as direct rival (*adjacent entry*)	• The offers of industry incumbents A benefit from the availability of complement B. • A is central and powerful. • A and B do not compete.	B enters directly into A's business, offering both the complement and the core, and thus —can exploit cross-subsidies to sell bundled A–B offer; —can keep A and B separate but drive down prices in A, increasing market size and asymmetrically benefiting from growth in demand for B; and —unlike a new entrant with no industry experience, B can benefit from known brand and relevant channel and consumer relationships. **Impact: Incumbent loses market share, influence, control, and/or bargaining power. The size of market is maintained or grows.**
(4) Complement becomes substitute (*displacement through value inversion*)	• Products A and B are complements. • Improvements in B initially increase the value creation of A.	Continued improvement in B eliminates the need for A. Thus, —B gradually replaces the combination of A and B, and —"the assistant replaces the boss." **Impact: Core demand for A declines as B replaces A.**

Table 4 - Three processes of disruption by complements (Adner and Lieberman, 2021)

A combination of dynamic forces generates disruption through complements: understanding of opportunities is altered by organizational maturity, cost and benefit calculations of entry over time are altered by technological change (Adner and Kapoor, 2010), while the effectiveness of a complementor in pursuing its new objectives is altered by capability building (Helfat et al, 2009). It is therefore possible that the equilibrium calculations and the options available to a complementary actor change from the moment it is able to construct the aforementioned key strengths, thus being able to act at the expense of a player belonging to the same competitive context.

A discussion about each of the three processes follows in the next sections.

2.4.2 Value Inversion: Complement Becomes a Substitute

At the beginning of last section, three different literature streams regarding disruption through substitution were listed. In particular, Christensen's notion (1997) of an inferior substitute technology becoming good enough. In order to highlight one of the three ways of disruption through complements, Adner (2021) contrasted Christensen's notion: "In the place of an inferior substitute technology becoming good enough, here we see an improving complementary technology becoming "too good", crossing over from a regime where

improvements enhance the value of the core offer to a regime where — without switching trajectory or competitive focus — the complement undermines the value of the core offer". This dynamic through which a complement becomes a substitute was called by the same authors *value inversion.*

Following an initial phase of positive contribution of a complementary actor to the focal firm's offer, three distinct paths can be encountered (see Figure 6):

- On the first trajectory, *continued synergy*, complements continue to enhance the focal offer's value as they improve;
- On the second trajectory, *maturity*, complements reach a point beyond which their own continued improvement stops impacting the focal offer;
- Most critical for understanding ecosystem disruption is the third trajectory, *value inversion*, whereby the complement's continued improvement beyond a certain point begins to undermine the focal offer's value.

The possibility that the relationship between a focal player and a complementary actor is inverted is therefore the theme around which the displacement through value inversion can occur. What differentiates it from the two ways that will be presented shortly is the fact that in this case there is no displacement of the strategic intent of the complement. In fact, both in the case of commodization and in that of adjacent entry, the complementary actor is deliberately looking for wider margins towards the focal firm. In the case of value inversion, what drives the undermining of the core offer and the consequent shift from complement into disruptive substitute is the technology improvement with respect to the one used by the focal firm. Moreover, value inversion occurs when, after an initial period of synergy (requisite for anything to be categorized as a complement), the complement begins to eliminate the value of the core (see the lower trajectory in Figure 6).

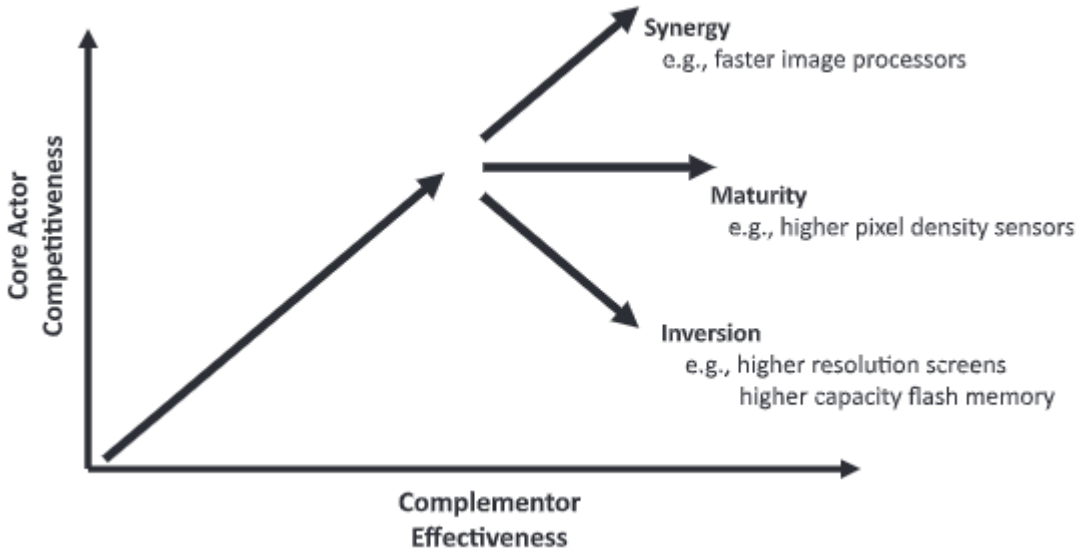

Figure 6 - The three possible relationships between the effectiveness of complements and a focal firm's own competitiveness (Adner, 2021)

An example of value inversion is the telephone line (complementor) and the relationship with the long-distance telegraph (incumbent). In the 19th century, the telephone was initially considered as a clear complement to the long-distance telegraph, allowing untrained operators to send and receive messages over short distances and increasing the long-distance telegraph network (continued synergy, see the upper trajectory in Figure 6). With improvement in transmission distance, the progress continued and resulted in a decreased marginal utility (DMU) from the improvements as regard the value creation of the core business (maturity). Thus, while initial improvement in the telephone were critical to expand the use of communication systems in the short distance, a turning point was reached when it was possible to send multiple messages in the same wire, in contrast with the limit of telegraph of sending one message at the time. That was the moment when the complement started to eliminate the value of the core in the communication realm, as a better technology was reached that enabled even not trained people to get in touch with each other, simply talking through electricity (inversion, see lower trajectory in Figure 6).

As this, there are plenty of examples of value inversion, such as three-dimensional printers that are shifting from prototyping enablers that increase demand for manufacturing capacity to becoming production engines, substituting for machine tool or, in the professional services sector, headhunters were substituted by LinkedIn as improvements in this social network enabled corporate recruiters to identify leads on their own.

2.4.3 Adjacent Entry: Complement Enters as a Direct Rival

When a complementor directly enters into the production of the focal firm's core offers, the path of disruption through complements can take place. There can be multiple reasons for this direct entry, rooted in the classic transaction cost concerns around appropriability and holdup risk: the incentives for firms to substitute vertical integration for market transactions in the face of incomplete contracts (Williamson, 1985, 1999), the quest for synergy and scale (Levinthal and Wu, 2010) and the unknown value of exploration and optionality that comes with new activity (Teece, 2018).

Despite the reason behind a complementor's entry, the demand for the core offer is maintained or even expanded if price competition intensifies, resulting in a loss of market share, margin and control for the incumbent. Complementors that enter as direct competitors differ from traditional diversifying entrants in that they are already rooted in the ecosystem. As pointed out by Adner and Libeberman (2021): "[Being already rooted in the ecosystem] can give them assets normally associated with incumbents — knowledge, brand, relationships, and distribution — that are more closely related to the core activity than what a typical entrant, de novo or diversifier, could be expected to possess. Close proximity in the ecosystem may also help the complementor learn details about the core business of the incumbent and thus provide an advantage in building capabilities required to successfully enter that business". In this case, the entry can take the form of a dedicated business unit where a complement producer integrates to compete with its partner, making in this way a strategic choice that can allow it to gain value and leverage within the ecosystem itself. Such vertical entry, even if it is only to gain a small foothold in the incumbent's business, enhances the bargaining power of the complementor (Wan and Wu, 2017).

There are a multitude of recent examples, one of which is the Netflix's and Amazon's upstream entries into film production and Amazon's entry into package delivery.

Adner and Lieberman (2021) suggests that this vertical integration move by a complementor cannot only explained by the commonly emphasized literature reasons of reduction in transaction costs, moral hazard and allocation of property rights (Williamson 1985, Hart 1995, Lafontaine and Slade 2007). A more dynamic and opportunistic purpose should be kept into account: increase the profits to be captured by learning more about the incumbent's business and, consequently, developing specific capabilities. Moreover, the cost and risk of entry are reduced when the complementor can integrate gradually into the incumbent's business, an option normally unavailable to diversifying entrants that come from outside the ecosystem.

There are many types of adjacent entrances beyond vertical integration, especially in today's competitive digital environments, and the one defined as *platform envelope* (Eisenmann et al. 2011, Parket et al. 2016) is one of them. It consists in the following: Company A's product or service starts as a complement to Company B's platform; if A is successful, there may be an incentive for Company B to extend its platform to incorporate a wholly owned version with the same functionality as A's offering. For example, Netscape developed one of the world's first commercial internet browser, which operated in the mid-1990s as a powerful complement to Microsoft's operating system. Initially, Netscape held a dominant share of the browser market. As a complement, Netscape's browser made Microsoft Windows more valuable to PC users. But as browsing grew in importance, Microsoft introduced its own browser and integrated browsing functionality directly into Windows, ultimately driving Netscape from the market.

The biggest difference for what concerns the economics of competition among a traditional entrant and a complementor is that the first one will try to maximize its profits on the same landscape as the incumbent firms, whereas the second one will maximize profits from a joint landscape, allowing in this way a cross-subsidization of the position to be kept in order to find different optimization points. There may exists different strategies to implement this cross-subsidization: the complementor can sell a bundled A–B offer at a lower price than specialized rivals, as a result of capturing volume on both sides (Heeb, 2003) or, alternatively, A and B offers can be kept separated, driving down prices in the market of A to increase consumption, which drives up demand growth in the market of B, where there could be greater market and pricing power.

It is rare that a complementor's interest is pushed until the replacement of the partner. It is rather more common an adjacent entry as a mean to further increase influence and bargaining power of the complementor with respect to the incumbent, in this way adding a piece to the commodization's process that will be shortly discussed. The purpose for a complementor is to keep on integrating, revealing itself as a credible threat once a foothold has been established in the business of the partner.

2.4.4 Commodization: Complement Drives Down Added Value

The commodization of the core offer is probably the most frequent mean by which disruption through complements can take place. The impact of the complementary actor in this case results in a decrease in influence and margin of the focal enterprise, unlike the reduction in demand for the core that occurs in the event of a disruption through a substitute. As defined by Jacobides and MacDuffle (2013), the commodization shifts the "locus of differentiation" from one

position of the competitive arena to another. What happens is essentially the following: Firm 1, initially dominant in the competitive scenario, produces the core offering but Firm 2, which produces the complement, gains market power thanks to a strategic change. As the complementor's power increases, the value of the incumbent's offer follows, thus leading to the commodization of firm 1's role, which occurs when three non-mutual exclusive factors take place:

- Barriers to entry are reduced by the complement, for example by reducing the fixed costs of preparatory entry operations;
- The complementary actor dictates the pace and direction of innovation thus becoming the key driver of differentiation;
- By increasing the substitutability among core producers in the eyes of consumers, the complement becomes the guarantor of the quality.

For example, the position of handset manufacturers in the smartphone industry was commoditized by Google's Android operating system. What happened is that Google entered the telephone industry in 2008, distributing its Android operating system for free to manufacturers. At first, leading handset manufacturers such as Nokia and Motorola had benefits from the adoption of Android's OS, which basically saw a reshape of the product's use, granting better internet access and exciting apps to be downloaded from the app store. Then, the true "smartphone revolution" started to take place, which transformed mobile phones from "phones with enhanced capabilities" to "miniature computers with phone capabilities" (Kushida, 2015). Core functionality of the product started to be controlled by the Operating System (Android in this case), providing a wide range of configurability and personalization to the customers, and making the manufacturers far less capable to differentiate themselves. This meant two things: first, the complementor (Google) was able to become a key driver of differentiation, since the more the OS was optimized by the smartphone, the more likely to succeed it was, ensuring Google's ability to dictate the pace and direction of innovation. Second, smartphones' design started to look similar, with large touchscreens and hardware performance depending on how well the phone could cope with the OS. This brough competition far from the previous design-based competition, increasing the substitutability of the smartphone themselves among customers and allowing to Google's Android OS to become the guarantor of the quality.
This "smartphone revolution" basically signed the rise of a new standard in the mobile phone industry, making the competitive advantage gained by the incumbents during previous years

null, decreasing the entry barriers and allowing to a bunch of newcomers to join the handset manufacturers industry (think of companies such as Huawei, One Plus, Xiaomi and so on).
The fall of incumbent communications equipment firms was dramatic. In 2011, Motorola sold its mobile division to Google (with the latter willing to enter as a smartphone manufacturer as well) whereas Nokia sold its core handset business to Microsoft.
Another example is the case study under analysis in this paper that will be better the focus of the next chapter, the MMR industry. As a point in fact, the pandemic increased the need for deliveries of groceries directly to consumers' houses, enabling the delivery services' companies to capture an increasing amount of the total value. These services simultaneously reduced the value of brick-and-mortar's supermarket location and facility, make supermarkets more substitutable, and enable the entry of a new class of competitors: "dark stores", which specialize in delivery orders.

The three ways through which disruption through complements can happen are not mutual exclusive. This means that, even if they are quite distinct and follows different pathways towards disruption, they are often present simultaneously within a system. Moreover, they have been presented in dyadic form (core and complement), in real word they often entail higher level of overlap. Ecosystems are defined as: "the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize" (Adner, 2017, p. 42), meaning that, in real word examples, disruptive threats can arise at the same time from different location of the system and a certain complement actor can threaten multiple ways of disruption simultaneously.
In the following chapter, the topics just reviewed will be treated and discussed in the case of analysis of the MMR industry.

2.5 Conclusions

In this chapter, the role of complementors from a strategic point of view has been deepened and specified, especially as regards the side of the concept of "co-opetition" (Brandenburger and Nalebuff, 1996) less treated by the reference literature, namely that of competition increase that these actors bring with them in a strategic landscape. This in light of the fact that, as argued in the previous chapter, one of the criticisms most often advanced against Porter's model about the

five competitive forces lies precisely in the fact that, with the growing need to rely on third parties to make more complete and successful offers to final consumers, both the literature and the companies themselves in their daily planning activities tend to overestimate the interests in common with complementors and to underestimate any problems related to the alignment of strategic interests, often involving large investments to manage the coordination of these relationships.

Specifically, the chapter led to a clarification of the often-confused roles between complementor and supplier, giving a definition that can help distinguish them and presenting two structural characteristics that identify complementors: conducting business directly with the focal firm's customers and, above all, the fact of sharing the same customers with the latter. Subsequently, the recent theories of Adner and Lieberman (2021) were presented, which belongs to the literature stream about innovation and value creation, more specifically to the capabilities prospective, which investigates the possibility of creating value by improving the competitive position of a company. The two authors, in fact, identify three scenarios through which complementors can shift profitability within a competitive context, moving from a value-enchaning role to a disruptor one. In the next chapters, it will be verified whether such scenarios have the possibility of realization in the case of analysis carried out in this thesis.

CHAPTER 3 – THE ONLINE GROCERY MARKET

The Mass Market Retailers (MMR) industry has always been a complex business, with low growth rates and meager margins. The effects of the pandemic have also been felt on this industry, whose growth rates have skyrocketed as people still needed groceries and other essentials, but with lockdown and "shelter in place" orders, the only way to shop in a safety way was by using the online channel. This drove digital adoption by new shoppers, increased online basket sizes and forced grocery retailers to rapidly adopt and scale new capabilities.
Throughout this process of changes, the course of which has been accelerated by the sudden increase in demand, opportunities have been created within the industry that few historical players have been able to exploit properly, especially in the face of business models based on supply chains and technological and digital infrastructures not ready to profitably satisfy the needs of consumers from home. For these reasons, actors such as online delivery services have shaken up a competitive scenario that seemed numb due to a mature industry lagging behind in the adoption of new technologies compared to other retail industries.

3.1 Market Trends

As the world begins its slow pivot from managing the COVID-19 crisis to recovery and the reopening of economies, it’s clear that the period of lockdown has had a profound impact on how people live. The period of contagion, self-isolation, and economic uncertainty changed the way consumers behave, in some cases for years to come. The new consumer behaviors span all areas of life, from how they work to how they shop to how they entertain themselves. These rapid shifts have important implications for retailers and consumer-packaged-goods companies. This is especially true for the grocery industry, where the pandemic brought a boost to online sales. The convenience of the online channel altered customers’ behaviors and expectations, resulting in a migration towards it. This shift in consumers’ preferences made possible the entry of new players, often financed by large investors, redefining the competitive landscape of the industry.

The next two sections will first investigate how consumer behavior has changed with the advent of the pandemic. Subsequently, the current state of the Mass Market Retailers (MMR) industry will be explored, in order to understand the main trends that this market brings with it.

3.1.1 How COVID-19 Pandemic Changed Customers' Shopping Behaviors

According to recent researches by McKinsey, consumers shopping patterns and habits have been changed by the pandemic. Factors such as shelter in place orders or high unemployment rates caused situations where the consumers spent most of their time at home. Significant macroeconomic, commercial and cost shifts have taken place in the last two years, causing a scenario that retailers must face as well. In particular, the following areas where key shifts have occurred in the retail landscape that will influence companies' pathways to success in the next normal are identified by Buck, Coggins, Francis et al. (2020), (see Figure 7):

- *Shifts in spending*: The playing field for retailers have been impacted by some macroeconomic dynamics. The results were that there has been a significant difference between demand for discretionary products with respect to that for nondiscretionary ones.
- *Shifts in purchasing, loyalty, and switching*: The pandemic brought with it also some commercial changes that impacted the way retailers originally did their businesses. Due to the restrictions to mobility imposed in most countries, consumers have been unable or unwilling to shop in traditional stores. As a consequence, online channel sales increased dramatically, about 20 percent in the grocery category. This also brought important changes in other drivers: consumer loyalty has been disrupted, and switching has become more common. The main reason behind it is that consumers showed strong preferences to buy through contactless or other "safe" ways, at the same time facing situations where they were obliged to replace their favorite brands in the light of product shortages and little availability.
- *Shifts in footprint, safety, and labor costs*: Considerations about costs have also changed for retailers, especially for what concerned the investments needed to safeguard their customers' and employees' health, maintain staffing levels and, above all, to improve or adapt their supply chains.

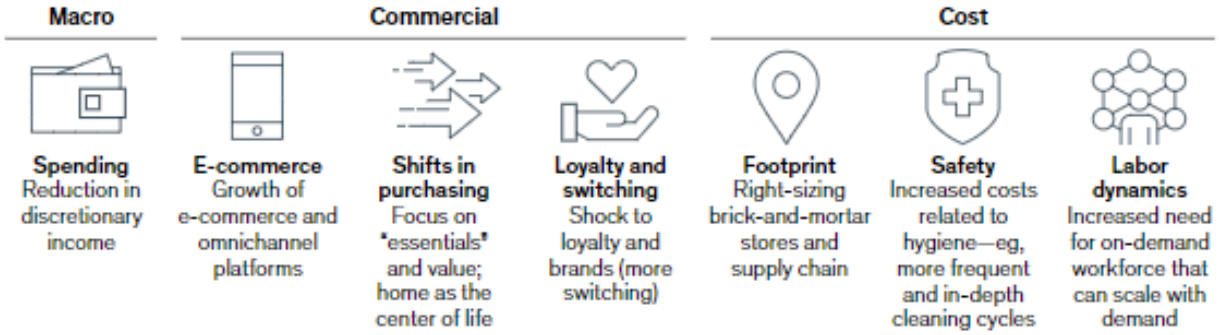

Figure 7 – Major shifts in retail landscape (Buck, Coggins, Francis et al., 2020).

Among these changes, the one that has most influenced the grocery sector is that of e-commerce. The online channel experienced unprecedented growth during the COVID-19 pandemic, driven by consumers looking for safe shopping alternatives. The growth trend of this market was already visible in the years preceding the pandemic, but the effect of lookdowns and the resulting health situation led to a development from years to weeks.
While the analysis of the market itself will be carried out shortly, this section seeks to understand whether this trend is destined to remain for years to come or whether consumer purchasing behavior will return to pre-pandemic levels.

The COVID-19 pandemic has changed our usual daily activities. Its spread, enhanced safety protocol, and social distancing have some effects on residents' normal shopping behaviors. Given the pandemic and safety concerns, customers have considered various options for their shopping for groceries that allow them to get the groceries they need without facing the safety risks or the inconvenience of the store restrictions and daily travels. Plenty of studies have been conducted to examine factors that influence online shopping during the pandemic, using survey data in different countries over the world, including the U.S., South Korea, China, Taiwan, India, Bangladesh, Yemen, Germany, Italy, Slovakia, Czech Republic. Some of these demonstrated benefits from online shopping, fears of the pandemic, media, and subjective norms (Moon et al., 2021; Showrav et al., 2021; Prasad and Srivastava, 2021; Yan et al., 2021; Lo et al., 2021; Alhaimer, 2021; Eger et al., 2021). Other studies emphasized the roles of hedonic motivation, economic situation, and satisfaction and trust with online shopping (Koch et al., 2020; Al-Hattami, 2021). While those studies provide useful findings, there are several important unanswered questions regarding customers' shopping behaviors during the pandemic. First, those studies used the data in 2020; some of them even used data in the very early stage of COVID-19, from March to June 2020. Accordingly, these studies only captured

customers' initial shopping behaviors in the early stage of the pandemic. It is important to note that customers' shopping behaviors are not static but very dynamic (BTS, 2021). As the pandemic progresses, their purchasing habits continue to change depending on many possible factors related to changes in COVID-19 situations, vaccine rollout, and financial situations. For this reason and for the purpose of this dissertation, the analysis of which the following data are based are the one conducted by Truong (2022), where the survey data used are the one collected by the U.S. Census Bureau in their Census Bureau's Household Pulse Survey Phase 3.1 from April 14, 2021 and July 5, 2021, and then compared with the findings of the researches cited above in order to catch a line in the data.

Truong (2022) used the fear appeal theory as the theoretical foundation for developing the conceptual model, performing a logistic regression to measure the impact of two types of fears related to COVID-19, fears for health and fears for financial conditions, on customer's online purchase spending in groceries. The first type of fear concerns the imminent risks that COVID-19 can cause to consumers' health, whereas the second one is about the financial risks that consumers are going through that can cause hardship for their spending capabilities.

The results underline how 46.1 percent of residents chose to spend more on online purchases since the start of the pandemic, where the effects of fears for health variables show that residents with no infection have an increased odds of online purchase spending by 13.4 percent compared to those infected with COVID-19 in the past. However, among those using the online channel, the odds of spending more on online shopping by those infected residents will be 1.61 times of the ones unsure about their health statutes. This means those that if a person had a good service in the online shopping experience, he/she would keep it going. For what concerns the fear for financial condition, residents with more difficulties with their expenses will have decreased odds of online purchase spending by 53 percent. On the contrary, the ones who received economic impact payment (government economic help) will have increased odds of online purchase spending by 41.5 percent. This could mean that consumers are intended to use online delivery methods for their groceries if the financial risk they are subjected is low, which could be a signal in favor of maintaining the habit even after the pandemic is over and their financial situation has improved or stabilized.

Further data supporting the hypothesis that the online trend is here to stay was provided by Inmar Intelligence, an American leading data and tech-enabled services company, which in a recent survey conducted over 1,000 U.S. adults revealed that e-commerce channel was already used before the pandemic, and now those customers gravitated to shop from their smartphone, via apps, or by mixing the online and in-store channels. To these early users, all those that

joined need to be added. The results of the surveys stated that 87 percent of the respondents experienced online shopping at least once before the pandemic. Among those consumers, the majority ordered from 50 to 75 percent of their grocery list and one over four ordered 75 percent or more by using a mobile app. Speed to checkout, product selection offered and general ease of use were identified as the top three reasons for shopping using the online channel.
Additional key findings emerging from the survey include:

- 39 percent of shoppers do 75 percent of their grocery shopping in-store, and only 19 percent solely shop online for 100 percent of their grocery list;
- Although 86 percent of respondents said they will return to in-store grocery shopping, a remaining 14 percent said they would not because they will not feel safe or do not have the time to go to stores;
- Mobile grocery shopping is the next wave of adoption, as 25 percent of shoppers said they do 75 percent of their grocery shopping via a mobile device/app, and 20 percent said they do 100 percent of their grocery shopping via a mobile device/app;
- Besides convenience, the checkout experience is what keeps people grocery shopping online vs in-store, as 35 percent of shoppers felt that shopping online is a faster process from choosing products to checking out, 28 percent like the ease of checkout, 19 percent like the product selection and 50 percent just do it because of ease in general.

Another research created by Business Insider with PayPal (2022), based on a survey conducted by Maru Group and commissioned by PayPal, found that more than three-quarters (76 percent) of respondents have bought groceries online for home delivery or BOPIS (buy online, pick up in-store) in the past year, and 73 percent of them plan to continue doing so.
For what concerns the European market, A McKinsey survey of European consumers based on Europanel data revealed that most of those surveyed did not think about changing their shopping expenditures in 2022 compared to previous year (a net intent of -1 percent). On the contrary, they planned to increase their spendings in those advanced online markets such as the United Kingdom (a net intent of +5 percent), the Netherlands (+4 percent), and France (+2 percent). In these countries, online's share of the grocery market stood at 8 to 12 percent in 2021, and its broader offerings have helped to increase customer satisfaction and adoption (Simmons et al., 2022).

3.1.2 E.Grocery: Data and Trends

The pandemic on the grocery sector generated what Richard Herbert et al. (2021) have defined "A year like no other" in 2020. The causes, although already briefly described above, lie in the fact that with restaurants, offices and schools largely closed in most countries during the first wave of the pandemic, consumers have rushed to stock up on food. Due to government restrictions and focus on health status, together with the recognition that the pandemic was going to last for months, the online channel in the grocery industry has gained significant share. As for Mastercard Economic Institute (2021), before the coronavirus pandemic, only seven percent of grocery retail sales involved e-commerce channels. During the peak of the emergency, the e-commerce share of grocery retail grew to ten percent. According to a report made by Statista Research Department together with Edge by Ascential, in 2021, ecommerce edible grocery sales worldwide accounted for about 5.9 percent of total edible grocery sales, while store-based sales stood at around 94 percent. By 2026, the sector's ecommerce sales are projected to account for 20 percent of total sales (Incisiv, 2021).

To have a better understanding about the extent of the phenomenon under analysis, a review of historical, actual, and forecasted data is thus necessary.

A recent survey by Acosta (2021) showed historical online share of all grocery sales in the United States from 2018 to 2021 and the relative forecasted data until 2026 (see Figure 8).

According to the data collected and the projection of the market, grocery sales through e-commerce channels are expected to increase, due to changing consumer behavior after the pandemic. By 2026, projections for the United States showed that e-grocery will account for 20.5 percent of total grocery sales.

Another data to keep an eye on is the number of online grocery purchasers, where Activate Technology and Media in their annual outlook for 2021 used data collected by a survey conducted by the US Census Bureau to stress the fact that from 2018 to 2021, the number of online shoppers doubled (from 72 million to 147 million). The same data is projected to reach 163 million by the end of 2026.

For what concerns the European market overall, based on Europanel data analyzed by Richard Herbert et al. (2021), the online grocery channel experienced a growth of around 55 percent over the 2020, compared with an average gain closer to 10 percent in 2019. In comparison, average growth rates in offline channels were significantly lower: 3 to 12 percent in the main offline channels (such as hypermarkets, supermarkets, and discounters) and around 7 percent in the others. This growth corresponds to a shift in market share of approximately 1.5 percentage points to the online channel, making it the biggest winner in both growth as well as

absolute market share gain. Furthermore, online channels contributed to about 20 percent of total grocery revenue growth in 2020, despite having only about 4 percent of market share in 2019.

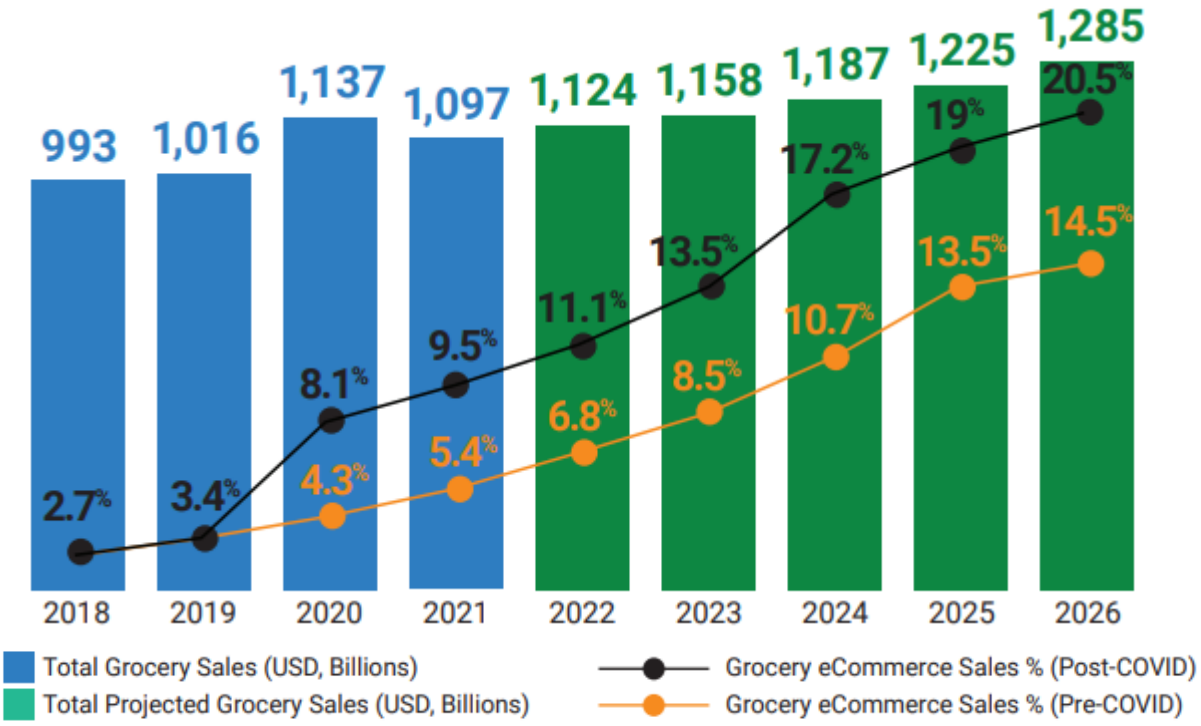

Figure 8 - Grocery e-commerce growth projection (Acosta, 2021)

As shown by McKinsey & Company in their annual report "The State of Grocery Retail 2022" (2022), in 2021 the online grocery trend kept rising, with a + 8.8 percent weighted average revenue growth with respect 2020 (+ 67.3 percent comparing with 2019), according with Europanel data and insights. In the same report, McKinsey projected the data up to 2030, segmenting in their analysis the market into leading countries (such as UK, France, Netherlands and Sweden) and those still catching up (Germany, Italy, Spain and Poland). For the first cluster of countries, according to the projection, online grocery could make up 18 to 30 percent of the food-at-home market (that includes the grocery market and the meal delivery market) by 2030 in the aggressive scenario, while still increase in the conservative and moderate scenario (see Figure 9), whereas the catching up countries, where the adoption of online offerings has been slower, will see increasing penetration due to disruptive players' ability to modify the expectation customers have and, consequently, their behaviours across propositions.

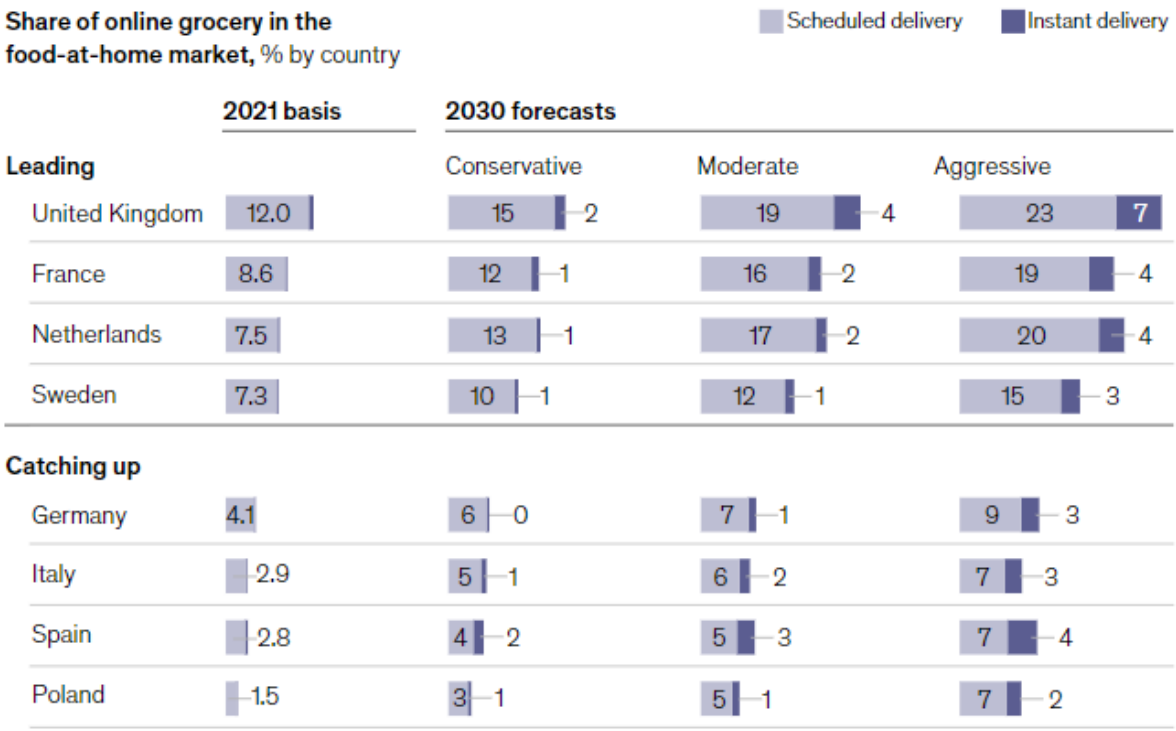

Figure 9 - Share of online grocery in the food-at-home market (McKinsey, 2022)

To understand which of the three scenarios could happen, Simmons et al. (2022) identified several factors that could influence the demand. First of all, the evolving customer behaviors. In fact, after COVID-19, online grocery offerings have expanded to address more shopping missions and customer segments, whereas before it had a more concentrated appeal, especially for urban or young people or for affluent families seeking the convenience of a large-basket delivery directly to their home.

The second factor is the increased competition and investment that took place inside the market. For what concerns competition, the next paragraph will investigate the current competitive state of the market, but it is evident that the online market is still shaping, and different propositions are emerging from online pure players. As per Simmons et al. (2022): "These offerings will likely mirror existing offline propositions and replace or improve on them" (see Table 5). As a matter of fact, full-basket offerings from players such as Ocado or Rohlik, characterized by large assortment, same-day delivery, precisely delivery windows, and competitive prices for core baskets-building items are very similar to supermarket offerings. At the same time, instant delivery from Getir or Gorillas, with smaller baskets, concentrated assortment, speed of the service and flawless user experience are the online's equivalent of convenience stores and small supermarkets, whereas no-frills offers such as the one proposed by Picnic (low-minimum-order values, no delivery fees and short assortment) are the discounters of the online.

Online proposition	Offline proposition	Proposition's characteristics
Full-basket delivery offers	Supermerket	• Large assortment • Same-day delivery • Precise delivery windows • Competitive prices
Instant delivery offers	Convenience stores and small supermarkets	• Smaller baskets • Concentrated assortment • Speed of service • Flawless user experience
No frills offers	Discounts	• Low-minimum-order values • No delivery fees • Short assortment

Table 5 - Online and offline propositions (Simmons et al., 2022)

About the investment: "The growth of the online market has attracted a record level of investment. Venture capital (VC) funds and consumer-packaged-goods (CPG) companies seeking to develop their own direct-to-consumer offering have joined the fray" (Simmons et al., 2022). It is evident that the players that will lead the disruption in the industry will be those that can secure the most out of this investment wave, but there are other factors that could impact with the growth of the market and its attractiveness to investors such as new regulation (an example could be the current freeze on new dark stores in Amsterdam).

Another factor that could shape the market in a foreclose future is the technology, which will have a dedicated analysis in the next chapter, but as per Simmons et al. (2022): "[…] is in the process of disrupting several parts of the online value chain, from user experience to order preparation to the last mile. With technological advancements, business models and operations that are unprofitable today could become more sustainable in the future". Some examples brought are the central role played by automation in transforming the cost structure for order preparation and last mile delivery or the personalization of the basket offered to customers, which could increase the average basket size. In the long run, online grocery could become a cheaper business model to carry out than physical grocery, thus leading to a situation where online prices are lower than in-store prices. If this eventuality were to happen, there would be significant losses in market share for all those players who have not developed a path to online grocery or who simply joined the online wave too late.

Beyond this risk, the growth that the online is experiencing will have some consequences for traditional stores, forcing grocery retailers to rethink their omnichannel strategies. Offline sales could still be the largest channel in grocery retail, but the role of brick-and-mortar stores

themselves will be crucial to create a distinctive experience to customers that can help in bringing them inside the stores. Costs and physical space reductions could become the new reality to face for offline grocery retailers' format as online channel gain sales volumes.

As just seen, there are a multitude of risks that traditional retailers and their physical networks are running. They are called to define strategies about where they want to play and with whom. In no time will be held the discussion about how most of the incumbent in the grocery market responded to the post pandemic boom in the online channel, and their strategies will be deepened. It is quite straightforward that investments in areas such as fulfilment, last mile, and technology are needed, devising the most suitable approach that could combine new capabilities and ways of working with historic strengths. In determining a new strategy, a core decision to be taken for grocers is whether to build and end-to-end offering by their own or partnering up with third parties.

3.2 Different Players on the Same Playground

With the changes brought about by COVID-19 (high online grocery penetration levels and customers' stated intent to continue to do their shopping online) e-grocery is the new imperative.

Many retailers are currently investing in their online business to gain a larger share of customers' wallets. In this game, they are up against pure online competition, as well as against alternative business models, such as meal-kit providers and meal-delivery platforms - that are often much more highly valued by investors due to their high growth expectations.

At the onset of the COVID-19 crisis, customer demand grew rapidly within just a few months. Basically, in 2020 it was five time higher than 2019 (Incisiv, 2021). Some grocers, such as Tesco in the United Kingdom, were able to quickly react and meet the demand, and thus their online sales expanded by up to 77 percent since the start of the pandemic to June 2021 (Partridge and Butler, 2021). Many other retailers, however, faced capacity and execution constraints in trying to fulfill the rising demand, often causing a poor customer experience. Grocers acting decisively now to offer satisfactory propositions and experiences aimed at gaining share and creating loyal customers will likely reap the rewards (Tjon Pian Gi and Spielvoge, 2021).

As the online channel has matured, grocers have diversified their online value propositions to cater to or shape customer expectations. Offerings now extend beyond the classic home delivery

of families' weekly groceries to address different customer segments, needs, or shopping occasions through instant grocery delivery, fresh ready-to-cook, meal delivery, and the like. Just as in the offline world, a differentiated online value proposition is crucial. Traditional grocers that are not in a position to feasibly invest in their own winning online business are increasingly opting for partnerships with ecosystems or for M&A with pure players and start-ups, in this way allowing them to test new propositions, accelerate time-to-market, and benefit from their partners' capabilities in the online game.

About this, with increasing scale and retailers more systematically addressing optimization levers, more profitable online grocery models have started to emerge, at least for ramped-up businesses. Partnership approaches also often aim to improve economics, for example through generating sourcing advantages or benefiting from better drop density in crowdsourced last-mile operations for instant delivery models. Finding a way to win share online while building a profitable business model is going to be one of the key challenges for many grocers going forward.

3.2.1 The competitive landscape of e-Grocery

With current online outlook characterized by high customer penetration and likely sticky demand, players are pursuing different strategies to try to achieve both growth and higher profitability. At the same time, common themes keep resurfacing, such as differentiating customer value propositions; optimizing and automating the "operations system"; and implementing cutting-edge digital, analytics, and tech tools and capabilities, often enabled through partnerships. Overall, there are three key types of players that are currently dominating online grocery (Tjon Pian Gi and Spielvoge, 2021): online pure players; ecosystems; incumbent retailers.

For what concerns the online pure players, they often provide highly tailored customer value propositions, such as value-focused assortments and service levels, fresh meal kits, or farm-to-table concepts. They do not face the same limitations as offline retailers, which are often bound by the need to maintain certain levels of consistency in pricing, promotions, and assortment across channels or by the need to deal with legacy systems and infrastructure. By leveraging digital and analytical approaches, tools, and capabilities in their workforce, pure players typically put a focus on differentiating and personalizing their customer experience to achieve higher conversion rates, larger basket sizes, longer-term loyalty, and, ultimately, greater customer lifetime value. Leading pure players often deploy modern technology throughout their supply chains to optimize fulfilment and delivery costs (for example, through microfulfilment

centers or optimized last-mile vehicle deployment). While staying light in assets and overhead compared with store-based competitors, pure online players seek out purchasing partnerships to benefit from scale effects.

These types of players also include online delivery services, which focus only on the delivery of groceries directly to customers' houses, thus creating a new level between the supermarket and the consumer.

An example of a leading pure player is Picnic, a Dutch no-frills online grocer that provides its customers with a user-friendly app combined with competitive prices, a low minimum order value, and no delivery fees. Drawing on advanced analytics and a fit-for-purpose technology stack developed entirely in-house, Picnic optimizes order preparation and last-mile logistics. The retailer increases efficiency through a targeted assortment, warehouse automation, and a milkman-run logic where electric delivery vehicles only visit a given area once or twice a day to increase the density of deliveries in the last mile. A new partnership with German supermarket leader Edeka has been signed with the goal of optimizing product-sourcing costs.

About ecosystems, it is known that many online giants have added grocery to their ecosystems and are using customer data from across their offerings (such as nonfood, payments, and social media) for optimization purposes. For these players, their grocery divisions do not necessarily need to be profitable as stand-alone businesses. Instead, the grocery operation supports the overall profitability of the ecosystem by securing daily traffic and engagement on the platform, thereby boosting loyalty and customer lifetime value and allowing for different, new revenue models, such as media monetization. The Chinese ecosystem Alibaba has been focusing on convenience for customers across channels as it offers instant omnichannel shopping across categories. Through its Hema retail-store format, part tech-enabled supermarket, part distribution center, customers can order groceries on their smartphones and either pick up their purchases or have them delivered within 30 to 60 minutes, depending on location. Alibaba's logistics arm and payment solutions enable this service. In fall 2020, Alibaba acquired from Auchan the majority stake in Sun Art, with approximately 500 hypermarkets in China, to further strengthen the group's offline presence. Across its many companies, offerings, and channels, Alibaba is thus optimizing customers' total lifetime spending on the company's products and services.

Amazon also took its grocery offering to the next level through its acquisition of Whole Foods in the United States. The deal not only expanded Amazon's sourcing capabilities but also allowed it to dig deeper in the understandings of customer food journey and provide them omnichannel offerings through Whole Foods' physical stores. The company also continues to

expand in Europe, most recently with the introduction of Amazon Fresh in Spain and a deeper partnership with local player DIA. In all geographies, the Amazon Prime loyalty program connects grocery and nongrocery platforms, while Amazon's data, analytics, and e-commerce capabilities are being applied to improve the food journey. Amazon is also experimenting with tech-enabled offline formats, such as Amazon Go (physical stores with entirely automated checkouts) and the recently opened physical Amazon Fresh stores in the United States (Hanani, 2020).

Finally, incumbent retailers with their own online offerings are striving to accelerate their e-commerce businesses and reach profit parity. They are currently transforming their businesses across many areas and making multiyear investments to improve and increasingly automate their operating systems and technology, facing the dilemma of doing it all by themselves or seek for partnerships or M&A.

The discussion about the way of managing the online business adopted by incumbent retailers will be held shortly but not before having shaped which factors make up a good business model in order to operate in this market and thus ride the growth pattern stressed before.

3.2.2 Managing the Online Transformation Effectively

To win the growth and profitability challenge in online grocery, retailers need to commit to a deliberate and transformative approach that ensures differentiation and optimization of customer lifetime value as well as cost. McKinsey & Company in its 2021 report about the state of grocery industry identifies three domains that need to be successfully addressed for an effective online transformation (see Figure 10): superior customer value proposition and user experience; operational excellence; digital and analytical capabilities and operating model.

For what concerns *superior customer value*, the value-for-money perception of many supermarket chains has been under pressure in recent years. The economic crisis has caused this challenge to become even more important to overcome. Competing on price alone will not be enough. Historically, price has been one of the fundamental sales drivers for grocers, and that still holds true today, but a core aspect of winning on value for money is striking the right balance by remaining competitive on prices while also figuring out where grocers can increase them without ruining price perception. Maintaining a good value-for-money perception has become more challenging and intense over the past decade — and three developments driving this can be found (Heintzeler, Vallöf, and Videlaine, 2021):

- Consumers are shopping more frequently across different grocers and stores;
- The rise of discounters has intensified price competition;
- The rise of online grocery shopping has increased price transparency and generates complexities around omnichannel pricing.

It is key to understand what delivers consumers' value-for-money perception to improve it in an economically sustainable way. Four drivers could be identified: provide attractive shelf prices on products where cost matters, offer a large variety of cheap products, keep a low overall basket price and promotions. Of course, all of these drivers need to be framed in consistent customer communications that reinforce the value-for-money message and proposed to the final customer through a *superior user experience* that drives customer lifetime value across channels (Heintzeler, Vallöf, and Videlaine, 2021).

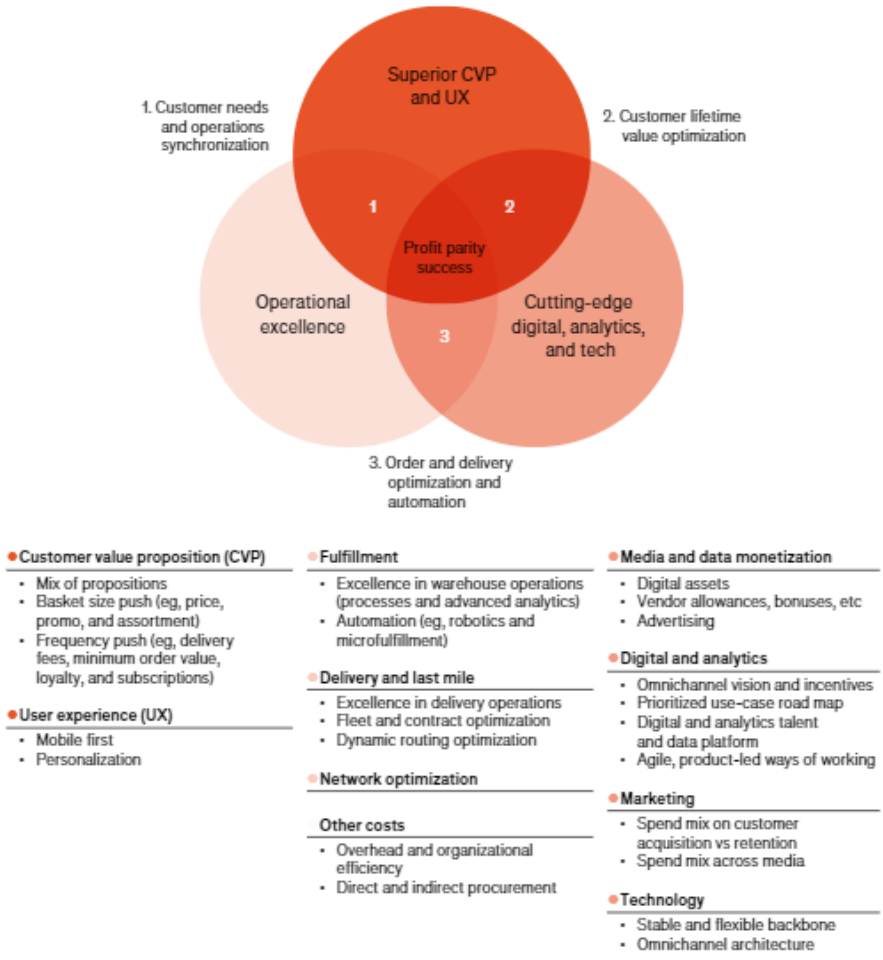

Figure 10 - The three domains for an effective online transformation (McKinsey & Company, 2021)

About *operational excellence*, automation in grocery warehouses has significantly accelerated. The role of automation within the grocery retail's supply chains has recently begun to play a crucial and central role, even though it has always been part of the industry. The global warehouse automation market grew more than 10 percentage points each year from 2015 to 2019, more than doubling down the numbers with respect to the previous five-year period. The trends seem to confirm this data since the market is expected to double by 2026. Three big evolutions appear to be the drivers of this shift, which are the falling costs due to technological enhancement, a steady increase in labor costs combined with workforce capacity and the growth of online channel in the grocery industry (Haddioui and Lange, 2021).

The wide range of technologies from which it is possible to choose and the ability to develop tailor-made solutions, has increased the number of implications retailers must face. The investment needed to enter the space is indeed lower, making the implementation of automated processes more attractive if shortages and labor rates are considered. To this point need to be added also the enhanced ability to tailor automated solutions to specific requirements a business may have. Examples such as omnichannel and microfulfilment demonstrate improved capabilities and performance and lower operational costs, while providing higher flexibility and scalability with respect to manual operations and traditional automation solutions.

In the specific case under analysis in this thesis, e-Grocery, microfulfillment centers (MFC) have as requirements warehouses with bigger SKUs portfolio, small orders with an elevated share of single-unit picks, and high-speed capabilities. Nonetheless, grocers all over the world are adding MFC to their implementation list in order to improve their operational capabilities.

On the delivery and last mile side, beyond the optimization of truck-fill rates, there has been a rising interest in dynamic routing solutions. The most advanced solutions optimize trucking routes in real time based on traffic conditions and disruptions, such as road accidents. Typical benefits of this technology include fresher products, timelier deliveries, and lower internal costs, as well as reduced emissions. Routing solutions can also be coupled with sensor-based technologies to monitor transport conditions, which are particularly helpful to detect issues with the quality of cold-chain transport that can damage or lower the shelf life of products. Adoption of these systems has started, though there is no clear breakthrough yet and supermarkets actors need to take quick decisions about possible partnerships to be made instead of building a delivery service in house (Haddioui and Lange, 2021).

Finally, retailers must deploy *digital and analytical capabilities and operating model* to differentiate their value propositions and ensure maximum automation of their operating

systems, which requires ongoing investment over the coming years. Grocers also need to build native digital and analytics capabilities in their workforces and introduce agile, product-led organizations that work cross-functionally. The monetization of core data assets or technology adds new income streams.

Advanced analytics, including artificial intelligence, offers a big opportunity for the retail industry. McKinsey Global Institute estimated in a study the potential annual value of artificial intelligence for the retail industry at $400 billion to $800 billion globally. For grocery retail specifically, the potential for an incremental increase is driven by commercial use cases around assortment, pricing, promotions, and personalization.

To determine what distinguishes analytics leaders from the pack, grocery retailers should be analyzed along two dimensions: analytical and organizational maturity (D'Auria et. al., 2021). What it is found is that capturing the value of advanced analytics depends even more on a retailer's organizational maturity than its analytical maturity. In fact, retailers can achieve results only if organizational maturity is in place, which is still the exception in the industry rather than the rule, and in many cases, it represents the main barrier to going beyond partial adoption and realizing analytics' full potential. Organizational maturity encompasses both processes to technically embed and continually improve use cases, as well as constant change management with the users of the analytical insights — fostering understanding of analytics, ensuring it is embedded in daily processes, and measuring against new key performance indicators (KPIs).

3.3 The Different Paths Towards the Online Channel

After having built up a clear picture of the competitive e-grocery landscape, it is now time to understand which path incumbent retailers are travelling to respond to the peaks in demand over the last two years.

There are mainly three solutions adopted by traditional retailers to face the challenge of bringing groceries directly to the customer's houses: the internalisation of the delivery service, the outsourcing of the delivery service only, and the entrusting to a third party for the supply of the whole service, which includes not only the delivery of the groceries but also the whole infrastructure that allows to interface with the final consumer.

Nowadays, about 32 percent of retailers in MMR industry are able to manage the whole e-grocery challenge in-house, whereas 22 percent opted for a partial outsourcing of the delivery service only and 46 percent decided to rely on third-party's infrastructures and platforms running the whole online journey, making in this way a total of 68 percent of players choosing to deal with third-party (Incisiv. 2021).

3.3.1 In-House Delivery System

In-house delivery system is the method adopted by many retailers who have integrated delivery services into their offerings. The advantages of this choice lie in the fact that all three domains mentioned above (Customer Value Proposition and User Experience, Operational Excellence and Digital and Analytical capabilities and operating model, see Figure 10) are managed internally. As pointed out by Tjon Pian Gi and Spielvoge (2021), incumbent players that choose to internalise the entire delivery process usually start by rethinking the value proposition that is offered to consumers, through assortment optimisation and price revisions for both online and offline channels. As previously stated, maintaining a good value-for-money perception in the mind of the consumer is vital. At the same time, the customer experience plays a crucial role in the implementation of good customer service when it comes to online sales. This is why many grocers are intensifying their efforts to improve the user experience offered by their services, for example through basket-size personalisation or by rewarding loyal customers via subscriptions or specific programmes. Another key aspect to be managed in business models that depends on the integration of this activity is that of correctly managing digital and analytical skills: while on the one hand it is important to generate revenue from the monetisation of digital assets and advertisement or from online supplier bonuses, on the other it is vital to build a technological backbone that allows you to leverage the data collected through online channels in order to improve the service, identify trends or clusters within your own user base, develop an omnichannel vision, identify the right spend mix both on customer acquisition versus retentions and across media. For what concerns the operations side of the business, it has to be optimised in terms of order preparation model, network and last-mile capacity, which are of great importance as cost drivers. To ensure future capacity and profit maximisation, those opting for delivery integration "must set up an operational network that fulfils the forecasted demand and service-level mix in a region at the lowest total operating cost" (Tjon Pian Gi and Spielvoge, 2021).

Tesco is a perfect example of how it has managed to integrate its delivery service into an established brick-and-mortar business. In fact, during 2020, the British chain's sales increased

by 22 percent thanks to improvements made to its delivery service in response to the pandemic outbreak. Revenue analysis shows that 1.3 million online orders were placed in spring 2021 alone. This means that the total number of transactions was 81.6 percent higher than the same period in 2019 (Tesco PLC Annual Report and Financial Statements, 2022). However, the success of the MMR giant is not only attributable to its ability to adapt its business to the pace imposed by the pandemic, but starts much further back: since 1994, Tesco has been active through Tesco.com in online grocery. As stated at the end of the previous paragraph, what makes the difference between the leaders and the followers in online grocery, even more so in the case of the integration of the delivery service, is the organisational maturity, something that Tesco has certainly developed more than others since 1994.

3.3.2 Outsourcing the Delivery

As mentioned in the introduction to this paragraph, if the choice does not fall on the integration of the delivery service, then partnerships must necessarily be formed with third parties. Specifically, in the case where only the mere delivery service is outsourced to an external actor, a relationship is created that entails the achievement of a good level of control of the three domains, with the exception of last mile delivery. In fact, as it happens for those who integrate the entire service, the decisions regarding customer lifetime value optimisation remain in the hands of the retailer, who can benefit from the insights provided by the data coming from the app and directly intervene on the mix proposed to the final consumer both in terms of product and user experience (see Figure 10). What changes is the operational side, where delivery and last mile are outsourced to what Tjon Pian Gi and Spielvoge (2021) identify as pure players or ecosystems players. Factors such as de-risk the business model, reduce part of investments related to the delivery process, leverage on external capabilities or scale, according to the two authors, are of great importance when choosing to outsource such processes. The biggest risk in using a method such as this is that most of times, the levels of optimisation of operations will not match those achieved by the players who have internalised the whole process, nor those achieved by the online pure players or ecosystem players with whom the partnership is entered into.

As per Incisiv – Whyshop study about digital grocery, 92 percent of grocery retailers says that they are dissatisfied with their current online order picking efficiency and 72 percent is of the opinion that their companies lack an accurate view of the store inventory. This concept is echoed by Melanie Smith (2022), CEO of Ocado Retail, one of the world leaders in the e-grocery sector, which offers both its own solutions to consumers and outsourcing solutions to

other MMR players in order to get to the consumers. In an interview with McKinsey & Company, Smith points out that the company's BtC business achieves 98 percent accuracy levels thanks to its delivery system and customer fulfilment centres (CFCs), which essentially operate as dark stores where assortments are regularly monitored and replenished to avoid out-of-stock situations for a given product, especially if it is a high-selling one. These service levels cannot be matched in the BtB branch as many chains base their fulfilment system on store pick-up, not knowing whether or not a particular product is present in the store designated for the pick-up, thus creating a disservice to the end user.

One example is provided by Ica, one of the leaders in the large retail sector in Sweden with a market share of 36/37 percent. In a recent interview, Per Strömberg (2021), CEO of the Swedish chain, said that the company has developed a partnership with Ocado to deliver groceries directly to consumers' houses since 2018. As the pandemic progressed, however, the need to scale quickly brought to light operational efficiency issues, suffering in terms of profitability despite the company delivered strong numbers in 2020. This has led to a change in the Scandinavian chain's strategy to meet online demand: "The main step we are taking now is our partnership with Ocado, which has two key implications. First, we are going to have an automated warehouse where robots are picking the products, versus the [current] store or dark store where picking is done manually. This means that you have more than twice the efficiency. The new automated warehouse will also allow for a long-tail assortment. The other element is the Ocado customer-facing platform, which is much better in driving profitability than the platform we have today" (Per Strömberg, 2021).

This testimony confirms how difficult it is to operate a business model in which only the delivery service is outsourced, as it entails implementation costs similar to those encountered by players opting for total integration from upstream to downstream, to which are added the costs of last mile delivery by the service provider.

3.3.3 The Provision of the Whole Service

If the choice falls on the outsourcing of the entire service and not just the delivery, among the factors represented in Figure 10, only two are managed internally by the traditional retailer:

- The choices related to the Customer Value Proposition, or the choices concerning the assortment to be offered to consumers through the partner's interface platform;
- How to optimize the fulfilment process.

All the remaining part of the process is managed end-to-end by the online delivery company to which it is outsourced, which again may be an online pure player or an ecosystem player. In the case of an online pure player, their strengths are the ability to focus on differentiating customers, to align with their value proposition, to exploit scale economies and to leverage their capability in the digital and analytics field. Delivery services represent those online pure players with which traditional retailers rely on the most. In the other case, ecosystem player, the vision of omnichannel approach to customer lifetime value creation and driving customer loyalty across channels are the key strengths from which to learn (Tjon Pian Gi and Spielvoge, 2021).

Many traditional retailers have opted for this type of solutions to quickly respond to the needs imposed by the pandemic in order to create a route to the online market. Partnering brings scale, infrastructure, and capabilities that the retailer would otherwise take years to build. Despite this, the fact that the data deriving from the entire purchasing process of end consumers are not entirely in the possession of the retailer deprives them of an important part to continue the growth and learning process in this sector, thus increasing the knowledge at disposal to who provides the whole service and increasing its bargaining power. Moreover, for the fulfilment process, as it is true for those players that chose to outsource the delivery only, they struggle in the fields of picking efficiency and inventory monitoring.

Entering into the detail, what basically happens here is that the traditional retailer either does not have a website on which they allow consumers to place their order, or they do, but at the time of placing the order, the consumer is redirected to the partner's site where they can select the supermarket chain from which he/she wishes to buy, which has the user interface platform and the technological backbone necessary for the user to place the order. What follows is that the entire purchase process is followed by the third-party partner, under its logo, within its own web domain, against a percentage payment on the order placed.

This is precisely where the substantial difference lies with the way of managing online sales discussed above. In fact, in that case, the final customer buys directly on the MMR player's site and only the delivery is made by the partner, therefore he manages to maintain a certain degree of control over the data deriving from the transactions carried out online, which is instead precluded (in the degree decided by the partner) in the case in which the entire purchasing process is managed by third parties.

The example is that of Lidl, the industry leader in convenience. The German chain, despite its large size in Europe and the US, does not have its own platform to enable home-delivery to its consumers. In 2017, it undertook pilot projects to explore the e-grocery market in the US, forming partnerships with Boxed, an online wholesaler, and Shipt, a delivery service company

owned by Target Corporation. As the pandemic progresses, Lidl has decided to strengthen existing partnerships (such as the two just named to serve its 165 shops in the US) and to forge new ones in some European countries (for example, in Italy it relies on Everli, formerly Supermercato24, in Ireland it relies on Buymie and in Spain on Lola Market). It is no coincidence that the German giant has decided not to offer any kind of delivery service in more mature markets such as the UK, Sweden or France, realising that the delay accumulated against other traditional retailers such as Tesco, active in e-grocery since 1994, and other pure players such as Ocado or Gorillas, is difficult to overcome in markets where the market share is already better defined.

3.4 Where Profitability Lies in e-Grocery

The COVID-19 pandemic fuelled growth in digital sales and as shown throughout this chapter, the growth path will continue even in the post pandemic environment. Historically, growth in grocery retailing was, on average, 2.7 percent year-over-year, and only once in the last three decades it has been higher that 5 percent (2011). In 2020, the annual growth of the whole industry was 9.5 percent, mainly driven by digital sales. Even with these strong numbers, high revenues are not always associated with high profits.

Incisiv (2021), in partnership with Wynshop, conducted a research study based on a survey methodology spanning 206 based grocery retailers, among which 88 percent were director-level and above and nearly a third (32 percent) of respondents represented companies with over $1 billion in revenue. The results stressed how the surge in online orders, both in terms of volumes and average basket size, has failed to translate into profits for most traditional grocery retailers, especially those below a billion dollars in revenue. It's no surprise that 86 percent of grocery retailers are dissatisfied with the profitability of their online business and 56 percent lose money or make less than 10 percent average margin per online order. This data shows that the path to online grocery is very challenging and, at the moment, unsustainable. If the trends continue like this, grocery retailers will lose $14 million in gross margin for every billion dollars of sales in 2025.

As shown in the previous sections, 68 percent of grocery retailers chose to enter a partnership with third-party platforms, which in total made up 46 percent of all online sales in 2020. The research study focusses on two key points in the discussion about profitability, which are:

- The third-party platforms or delivery services companies are growing at a much faster rate than the direct to commerce business of traditional retailers. In fact, 8.3 percent of total grocery sales are expected to be completed though these companies by 2025;
- Traditional grocery retailers are reliant on these platforms. Over 2/3 of the surveyed respondents (66 percent) believed that their companies cannot face the challenge of scaling their online businesses without the help of third-party platforms or delivery services companies. This is particularly true for those MMR players which annual revenue is lower than $1 billion, where 75 percent of respondents confirmed the great dependence over these services.

Traditional grocery retailers suffer with third party platforms, not just in terms of profitability but also if the long run time horizon is considered. 81 percent of the respondents believe that these types of services will become their direct competitors in the future, whereas 84 percent believe they are losing touch with their customer base as third-party platforms become the front-end commerce brand and, in effect, disintermediate them from their shoppers.

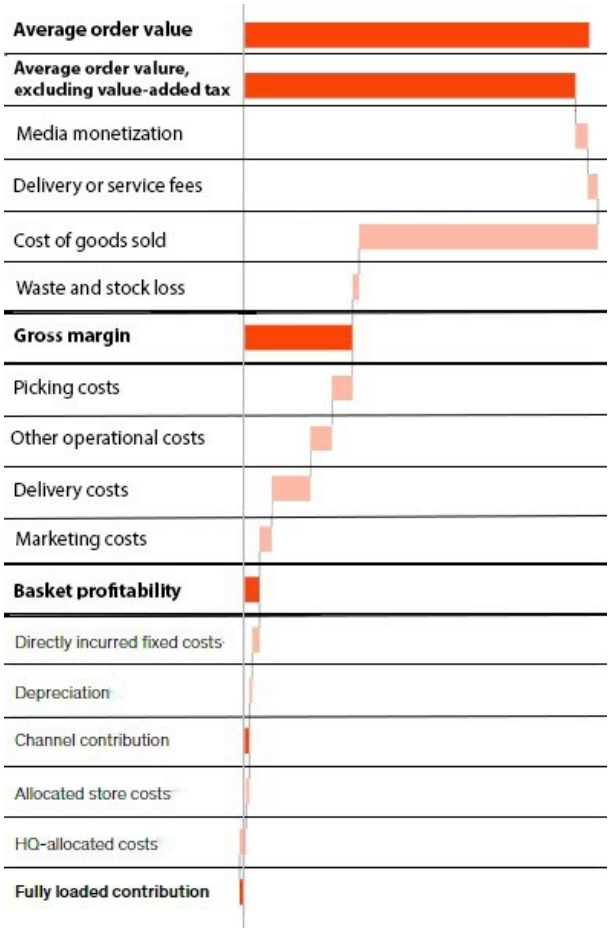

Figure 11 - Waterfall Analysis of Basket Economics in e-Grocery (McKinsey analysis, 2021)

These data about profitability are confirmed also by McKinsey analysis (2021), according to whom the online grocery average basket size economics has a negative margin, as shown in Figure 11.

The drivers where grocers can leverage the most to create value are picking, operational and delivery costs (Tjon Pian Gi and Spielvoge, 2021). The first two can be optimized, as evidenced throughout this chapter, by choosing optimal fulfilment model for local demand level, as well as by seeking operational excellence in all processes and system support and by lowering the cost in through automated models at expense of higher capital expenditures.

For what concerns the optimization of delivery costs, the main drivers by which these types of costs can be decreased are by seeking operational excellence in loading and unloading processes, route optimization, and vehicle design, as well as by smoothing and increase density of demand.

The data about the profitability of e-grocery are crucial to understand what the future implications of the entire MMR industry may be. Based on the data collected, it can be said that delivery services or third-party platforms represent a much larger reality than a simple complementor. In this case, to paraphrase Nalebuff and Brandenburger (1996), the impact of these players has certainly enlarged the pie, but in the current state of things, sharing it will not be so simple. Delivery services seem to have placed themselves in an advantageous position, both from a technological point of view, as it will be shown shortly, and a strategic point of view, positioning themselves between the traditional retailer and the final consumer and gaining market power and contractual strength towards industry incumbents.

3.5 Conclusions

This chapter focuses on the collection of data concerning the mass market retailers (MMR) industry considering the recent COIVD-19 pandemic and its consequences. The first aspect investigated was that of consumers' purchasing habits and how these have changed in the last two years. Specifically, using research carried out on the American and European market, it was shown how the trend of online spending is destined to remain in the future. Through an analysis of both historical and prospective data, it was shown how e-grocery represents the driver with the highest expected growth for the MMR industry and how the emerging

propositions in this channel are replicating those present in the traditional brick- and-mortar business.

Then the focus shifted to an analysis of the competitive landscape of the industry, which on the one hand sees in the online pure players and ecosystems the types of players that are dominating the e-grocery scene, supported by some traditional retailers already active in the shopping at home business before the pandemic started, and on the other hand recognizes new areas in which it is necessary to excel in order to offer online customers an adequate and winning proposition (such as operational excellence and digital and analytical maturity supported by an adequate backbone technology). The three most frequently used solutions to manage the boom of the online channel have been analyzed according to these new areas where a competitive advantage can reside, uncovering three main critical fields in which traditional retailers are struggling: picking efficiency, inventory monitoring and delivery costs. This forced in 68 percent of cases to choose to enter partnership with third parties, in some cases for the delivery service only, in others by outsourcing the entire management of the online service, the difference of which lies in the possibility of interfacing directly to the customer. In closing, the topic concerning the profitability of the sector was addressed, which highlights how, especially for smaller companies (less than $ 1 billion in revenues), the possibility of reaching consumers online does not always translate into profit.

CHAPTER 4 – COMPLEMENTORS' SHIFTING ROLE

The exploratory analysis conducted so far has allowed us to observe how the MMR industry has considerably changed with the advent of the pandemic, which has brought with it important changes in consumer purchasing habits, generating a boost to e-grocery. This situation therefore led to two important events:

- Historical industry players have found themselves obliged to adjust their business models considering the online market trends;
- Set the ground for the entry of new players capable of improving industry's operational efficiency (such as Ocado with the Microfulfilment Centers), in this way increasing the intensity of competition of the industry.

The next and last step in this dissertation is to combine the empirical evidence collected about the MMR industry and the literature carried out in the previous chapters to highlight evolutionary trajectories that identify a change in the role of complementors within the Porter model.

First, a Five Forces analysis of the industry will be carried out, in order to have clear in mind what is the competitive scenario's starting point. Right after and following what has been presented in this dissertation, some questions should arise concerning the real role that these players play in this new competitive context (are they complementors or suppliers? Or could they be someone else?) and if industry's traditional retailers can sleep peacefully or if instead, they have to be ready for a possible incoming shakeup to the competitive environment.

The shifting role of complementors within the industry will be investigated through the lenses of Adner and Lieberman (2021) theories presented in chapter two. Specifically, the two authors affirmed that a combination of dynamic forces generates disruption through complements, which can take place in three different scenarios: adjacent entry, displacement through value inversion and commoditazion.

In the next sections it will be shown how both the three dynamic forces that generate disruption through complements and the factors necessary for the commodization scenario to occur are present in the case study under analysis.

4.1 MMR's Industry Five Forces Framework

As a starting point in this discussion, it is useful to represent the Five Forces framework for a firm active in MMR industry as it was before COIVD-19, in order to understand what could be the path evidenced by the changes brough by the pandemic, highlighted in the previous chapter. Following the same order presented in chapter one, the threat of entry was weak, since there was a multitude of factors that made quite difficult to join the field (Reid, 2018):

- high economies of scale;
- significant experience-based cost advantages and limited access to distribution channels;
- high capital requirements;

These factors constituted the main barriers to entry, especially the dimensional point of view.
For what concerns bargaining power of suppliers, it could be defined weak, since most of the players buy in large quantities, resulting in a reduced unit costs and increased profit margin. Moreover, supplier groups are usually not concentrated and do not usually bring with them the threat of forward integration.
Moving on bargaining power of customers, it is quite strong since customers can switch between competitors who offer very similar products and services. In order to mitigate the impact of such a force, a grocery retailer has to focus on features such as quality, own labels, marketing, range of offer, shopping experience and membership logic, trying to gain the loyalty and trust of the customer (Reid, 2018).
About the threat of substitution, it depends on the type of product. The distinction to be done is among food and non-food items: in the first case, the threats are quite low for food, since the main alternatives are specialized stores (for example, in organic food), whereas the degree of substitution for non-food items are medium to high, especially in the last decade with the rise of Amazon.

Finally, the rivalry among competitors is extremely high, especially over price, product and promotion domains.

4.1.2 Where to Place Complementors Within Porter's Framework

It is clear that the three way of managing the growing demand for online grocery differ both in operational terms and in the maturity required to operate efficiently. The one that seems to be on the way out, as confirmed by the Ica - Ocado case presented in the previous chapter, is outsourcing of delivery only, which involves similar costs to integrating the whole service but greater uncertainties due to the operational efficiency problems encountered. The impression is that the models that could survive are the two extremes: total integration and outsourcing of the entire delivery process.

The question that arises at this point in the discussion is how the various players within Porter's model are to be identified. If in fact in the first case (integration of the delivery service), one does not have to deal with third parties in any phase of the process, going directly from the retailer to the customer, this is not true in the other two cases. Here, in light of the differences among these two ways, it is important to understand whether the player with whom a firm decided to collaborate is a supplier or a complementor. As defined in the second chapter, the way in which it can can distinguished a complementor from a supplier lies in the possibility of sharing mutual customers between focal firm and third party, and doing business directly with them. Applying this reasoning in these two different contexts, those actors to whom only the delivery service is outsourced should be categorised as suppliers, since their customer is the retailer and not the final consumer.

For what concerns the provision of the whole service, it may seem that third-party partners are suppliers, since it could appear a mere supply of a service. This is actually misleading, since these actors put themselves in between the focal firm (traditional retailers) and the final consumer, providing the entire service related to the online journey. These players are therefore a necessary step for the traditional retailer to enter the online market, preventing direct contact with the consumer, which following the reasoning of chapter two discussion, is a clear sign that the player you are dealing with is a complementor and not just a supplier.

But still, there is a piece missing that an MMR player should certainly account for in drawing Porter's framework, which is the bargaining power of these complementors. As explicitly shown in the previous chapter, online delivery services are changing their impact from a value-enhancers role to capturing much of the traditional retailers' profitability, and the rest of this chapter points exactly to a deeper comprehension of the topic.

4.2 The Dynamic Forces that Generates Disruption Through Complements

In order to meet the theories of Adner and Lieberman (2021), for disruption thought complements to occur, a combination of three situations needs to happen:

- Understanding of opportunities is altered by organizational maturity;
- Calculations of entry over time are altered by technological change (Adner and Kapoor, 2010);
- The effectiveness of a complementor in pursuing its new objectives is altered by capability building (Helfat et al, 2009).

What follows is a discussion that show how these forces are actually present in the industry case under analysis and they are also quite combining themselves, generating the possibility for a complementor to disrupt the industry and gain a stable foothold in the industry.

4.2.1 Organizational Maturity Alters the Understanding of Opportunities

The first dynamic force that Adner and Lieberman (2021) define as necessary for disruption through complements to occur is organizational maturity, which, according to the authors, alters the understanding of opportunities.

One of the most important takeaways of the previous chapter was that in order to build a proper path to online customers, a MMR's player needs to excel in a multitude on domains, some of them new to the competitive environment (think of a superior user experience or digital and analytical capabilities and the relative supporting technological backbone). This created a gap between those players who had already implemented business solutions to explore these domains and those who had not yet done so, which should be understood both from the point of view of technology and the improvements to operations necessary to be able to operate, and from the point of view of the corporate maturity required to be able to fully capture the value that derives from these enhancements. As per D'Auria et. Al. (2021), cited in the previous chapter, the success on the online path depends more on the organizational maturity than its analytical maturity.

It is no coincidence that the companies that have managed to ride the wave best are those that already had infrastructure and, above all, experience in online grocery, as seen in the previous

paragraphs (for example, Tesco and Ocado). These players could count both on infrastructures and already tested systems.

For those that did not have any experience in this new fields, two were the ways to cope with the requirements to reach online customer:

- Try to develop a path internally, facing inefficiencies that occur when things are done faster, known as *time compression diseconomies* for intangible assets (Dierickx and Cool, 1989, Jenson, 2012, Knott et al., 2003);
- Rely on an external partner to close the gap, facing profitability problems.

4.2.2 Technology Change Alters Calculation of Entry

The first dynamic force, organizational maturity, as just seen, alters the understanding of opportunity and open a gap among the players of a certain industry when a substantial change take place within the borders of the competitive scenario of the industry itself. From this perspective, a technological change is also required to happen if a firm what to keep up the pace of innovation in the new environment. Here it is the connection with the second dynamic force identified by Adner and Lieberman (2021): technological change that alters the consideration regarding costs and benefits of entering the industry.

In this regard, the original model proposed by Adner himself in collaboration with Kapoor (2010), highlights how the advantage of being the technology leader depends on both the location and the magnitude of uncertainty. Specifically, the two authors demonstrated how the innovation process, if approached with a complementor, reduces the competitive advantage of the technology leader, slowing the progress of innovation itself on the learning curve and giving more opportunities to rivals to catch up.

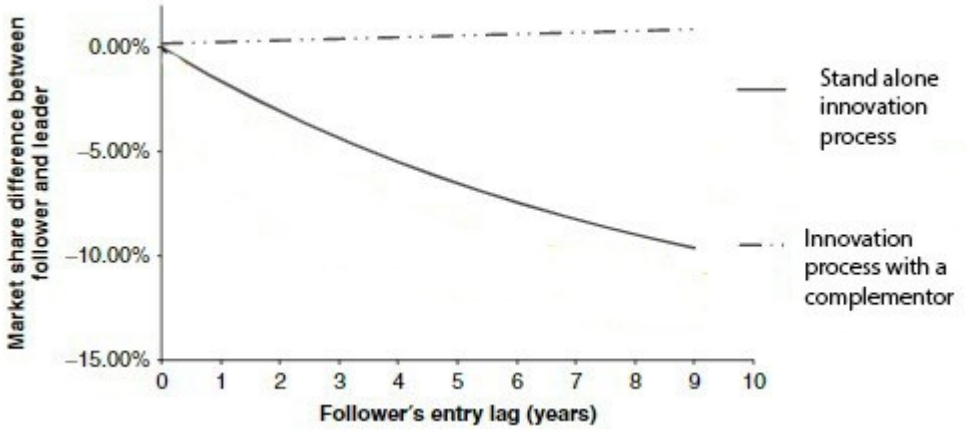

Figure 12 - Market Share Difference between follower and leader in innovation process (Adner and Kapoor, 2010)

This concept is represented graphically in Figure 12, where it can be easily seen how the innovation faced with a complementor does not entail any advantage in terms of market share for the technology leader (dotted line), in comparison with the solid line that represents the process innovation carried out internally (stand-alone innovation process).

In order to stay competitive and keep the pace with innovative incumbent players like Tesco or pure online players like Ocado, grocers are called to upgrade their technology. In this industry, it is vital to improve operational efficiencies through upgrades in areas such as picking, operations and delivery. There are different types of technology developments on which grocers might focus, which Incisiv (2021) ordered based on:

- The impact that a particular type of innovation could have on the capabilities of the MMR player (vertical axis in Figure 13) and;
- The deployment or 24-month upgrade of a certain technology (horizontal axis in Figure 13).

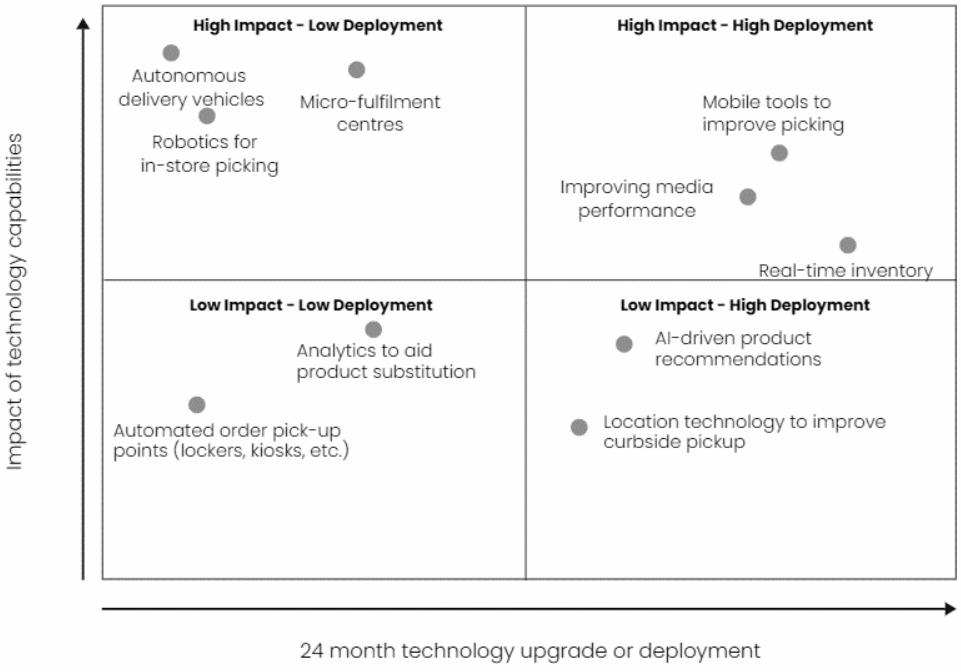

Figure 13 - Technology Impact vs Deployment Matrix (Incisiv, 2021)

What is sure is that grocers have a significant technology gap to overcome as they try to reduce dependence on delivery services platform or online pure players and improve their operational efficiencies. The more time pass, the more the gap in terms of market share with the technology leaders (among which there are not just new players such as Ocado but also other traditional retailers like Tesco) will increase, as stressed Adner and Kapoor (2010, see Figure 12). This

means that, after a certain point in time, the difference will be too large, and it will be too late for competing in the e-grocery scenario, recalling the concept of time compression diseconomies cited in organizational maturity discussion. Even if grocery retailers believe that new technologies like robotics and autonomous vehicles will have a disruptive impact on grocery environment, Incisiv research study (2021) reveals that their investment focus is on technology that can drive a clear, established business outcome that can help in match capabilities such as inventory visibility or mobile picking, trying to catch up with the technology leader such as online pure players, delivery services or those retailers that implemented these type of solutions before it was a call to survive. This pattern is quite evident in the choice of Lidl to avoid the entry in markets such as UK or Sweden, which are considered more mature that others (such as Italy or Spain).

On the other side, new technology adoption by delivery services enabled them to climb the hardest entry barrier in MMR industry, the dimensional one. In fact, they place themselves in between the MMR player and its customers.

So, it is true that technological change altered the way players consider costs and benefits for entry in the MMR industry.

4.2.3 Capability Building Alters the Effectiveness of a Complementor

Last but not least, the capability building by incumbents alters the effectiveness of a complementor in pursuing its new objective is the third dynamic force of Adner and Lieberman (2021).

Here the connection with the other two dynamic forces comes up, since with no experience on new technology required and the importance of organisational maturity over analytical maturity in extract most of value that comes with new technologies, incumbent retailers faced a situation where:

- The option of stand-alone innovation is troublesome since there is time compression diseconomies;
- The choice to partner up with third parties or to develop with them solutions to draw the path to online customers do not enable the retailers to gain any advantage, both in terms on profitability and closing the technological gap.

Therefore, the capacity building for incumbent retailers is greatly reduced and the way to fill the gap is uphill. A possible way out could be to opt for acquisitions of these third-party delivery

services, which however represents a viable path only for players of considerable size. In fact, the French giant Carrefour has recently acquired the stakes of two jewels of French Foodtech, Dejbox and Quitoque, both experienced companies active respectively since 2012 and 2015 in the foods and groceries deliveries (McKinsey & Company, 2021).

4.3 The Commodization Scenario

Once the three dynamic forces that create the conditions for disruption through complements have been shown, it is now time to investigate what scenario could occur in the MMR industry. Adner and Lieberman (2021), identify three scenarios in which this disruption can occur, and one in particular seems to have already occurred, namely commodization.
As seen in the previous chapter, it happens in the event that a player (B), already present as a complementor within the focal firm (A) indsutry, acquires market share thanks to a strategic change and, subsequently, involves a weakening of A's bargaining power and a reduction in margins. Adner and Lieberman (2021) define three non-mutual exclusive factors whose realization could have seen the commodization of A's role by B, namely:

- Barriers to entry are reduced by the complement;
- The sostitutability among core producers in the eyes of consumers is increased by the complement actor;
- The complementary actor dictates the pace and direction of innovation thus becoming the key driver of differentiation.

As observed, the strategic change defined by Adner and Lieberman in the MMR industry has been brought by the pandemic, which esponentially increased the need to adjust business models in order to better face the challenges imposed by the COVID-19 situation around the world. This change is referred to new technology enhancements in the fields of picking, operational excellence and delivery of groceries directly to customer houses in an industry where few players already implemented strategies and had enough experience to operate in a sustainable way.
About the three non-mutual exclusive factors, all of them appear to have occurred since the start of the pandemic and the increase in demand for home deliveries.

Starting with the reduction of entry barriers, as seen in the previous Five Forces model of the MMR industry, the biggest barrier to entry is the dimensional one. In fact, there were a multitude of factors that made difficult for a potential entrant to get the scale required to gain enough bargaining power in order to grant price levels low enough to be considered competitive by the consumers, such as high economies of scale, experience-based cost advantages, limited access to distribution channels and high capital requirements. Despite this, these barriers do not stand in the case that the entrants are already consolidated in the industry. And this is the case for the MMR industry, where delivery services were already consolidated in the industry and the boom in online demand made it possible to turn the spotlight on this part of the value chain. The position in which these companies find themselves enables them to avoid direct issues related to the aforementioned factors, since they offer the most viable way for those traditional retailers that was late in finding their path to online grocery. Moreover, new operating models based on new technologies such as Microfulfilment Centers (MFC), a digital backbone that guarantees a nice user experience and the exploitation of media monetization and data analytics, helped to decrease the investment required to enter the space, to increase capabilities and performance, to lower operational costs even further, and provided higher flexibility and scalability than the traditional MMR approach based on big regional hubs. Another side of the coin that contributed to lower the barriers to entry in MMR industry is the high growth rates expected for online pure players or third-party platforms for delivery, which put a lot of private equity and venture capital focus and investments, increasing the financing accessibility.

For what concerns the substitutability of core retailers in the eyes of customers, the main issue highlighted in the previous sections for those incumbents that chose to outsource to third-parties the whole online journey (46 percent of total MMR players) is that there is no possibility to keep control of the customer interface platform. This involves the loss of direct contact with the consumer, which has a double negative effect: first, there is no direct control of the data relating to product sales, which makes the process of improving the offer more complicated for different clusters of consumers according to their needs, the second allows the consumer to have visibility of prices in a simple and effective way, since on the third-party website or platform there are a multitude of offers from different supermarkets. This shifts customer loyalty from the traditional retailer to the delivery service that provides a more complete user and customer experience. It comes with no surprise that 81 percent of grocery retailers think that these “complementors” will become direct competitors in the future and 84 percent of grocers confirm that they are losing touch and loyalty with their customer base (Incisiv, 2021).

Regarding the last point, the pace and direction of innovation in the three crucial areas to run the online grocery challenge in a profitable way (picking, operational excellence and delivery of groceries) are very likely to comes from those previously identified as technology leaders, so online pure players or third-party delivery platforms, since the majority of traditional retailers focus is on trying to catch up on those technologies that could improves operational efficiency of their business model (such as MFC or real time inventory monitoring systems).

Everything must then be reconciled with the profitability data, which shows how much of market share and bargaining power traditional retailers are losing in favor of their "complementors" delivery companies.
The evolution in the next years will for sure determine how the pie will be divided in e-grocery, but what is sure after the analysis of the industry and its key trends after the pandemic, is that the scenario of commoditization described by Adner and Lieberman (2021) has already taken place in the MMR industry.

4.3.1 Shifting Role: From Complementors to Customers

The prominent role of delivery services in complementing traditional retailers' online offers in the MMR industry is one of the most important highlights of the industry analysis done in this chapter. With the gains in market share and bargaining position, these services place themselves in a very borderline competitive role in industry hierarchy, since it could be identified, as shown, as a complementor or as a supplier, depending on the path chose by the traditional retailer to reach out online market. But there is probably a role that better fits to these types of players at this stage of the competitive scenario.
Porter, in his 1979 framework, define customers as powerful if they have negotiating leverage relative to industry actors, especially if they are price sensitive and if they can use their clout to pressure reductions. Regarding price sensitivity, it is higher for customers if the products sold are undifferentiated, represent a significant fraction of their cost structure of procurement budget and if quality is not particularly important. Moreover, Porter added that most sources of customers power apply in an equal way to industrial and commercial consumers with one important addition: the business-to-business consumers or intermediate customers can gain significant bargaining power over manufacturers when they can influence final consumers' purchasing decision.
As shown in the current chapter, these conditions are respected in the MMR industry, where bargaining power of delivery services increased significantly since the start of the pandemic,

especially because of the position taken by these players, exactly in the middle between a traditional retailer and its customers, being able to influence customers perceptions and perfectly representing the definition of "intermediate customer". Delivery services are not less price sensible than final consumers are, since the less a product costs, especially if undifferentiated as most of the products that are offered through the online channels that could be brough from different MMR players, the higher the margin the delivery players can get. In a foreseeable future, once the market for online grocery will be stabilized and the most profitable offers remained alive, traditional retailers could face a situation where the contractual power of intermediate customers such as a delivery service will be higher enough to drive down prices. This could be made possible by the loyalty that these services could gain over time, up to the point that the final customer no longer cares which traditional retailer the products purchased come from. The consequences would be that the conditions for accessing e-grocery for a traditional retailer would be dictated by delivery services, which could ask for higher margin and preclude players who do not have an efficiency degree high enough to comply with the requests.

4.4 Conclusions

This fourth chapter brings together the theoretical revision carried out in the second chapter and the data deriving from the previous one. Specifically, at the beginning of this final section, the complementary players identified through the definition established in the second chapter were added to the Five Forces model of the MMR industry. Despite this, the process of data analysis carried out in the third chapter suggests that, due to the increased bargaining power, the role of these actors cannot and should not be framed in a static way within a single force, but rather needs to be reviewed and redesigned based on one hand, on the historical and prospective analysis of trends relating to the online channel and the broad MMR industry, and on the other hand following the literature given in the second chapter concerning disruption through complements. Therefore, the first step was to verify that the three conditions identified by Adner and Lieberman (2021) for disruption to occur (understanding of opportunities is altered by organizational maturity, calculations of entry over time are altered by technological change and the effectiveness of a complementor in pursuing its new objectives is altered by capability building) were present within the case study proposed by this thesis. Subsequently, it was noted

how the bargaining power gained by third parties over those mass market retailers that decided to collaborate to reach online customers has led to the *Commodization* scenario identified by Adner and Lieberman (2021), characterized by lower negotiating power and margins for the focal firm. In fact, all three non-mutual exclusive factors defined by the two authors for the commodization scenario to occur are present within the MMR industry. This confirms that there is a change of role in progress regarding third-party delivery services, which are increasingly taking the appearance of what Porter (1979) identified as "intermediate customers" in his model, so players who must be analyzed exactly like normal customers but with an important difference: they can gain bargaining power if they are able to influence the final consumer's purchasing decision. This feature is present when the whole online purchasing process is outsourced by traditional retailers to third parties, which in return allow the retailers to offer their products through their online platforms, creating at the same time a new layer that prevents direct interface with final consumers.

The exploratory analysis conducted therefore allowed, on the one hand, to better investigate the role of disruptors that complementors can play within an industry as their bargaining power increases, and on the other, as the identification of these actors within the Porter model is not univocal and anchored to a single force, but rather is variable and dynamic, based on the competitive position reached by the focal firm also with respect to these actors.

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