"Manufacturing, Forward Integration and Governance Strategy"

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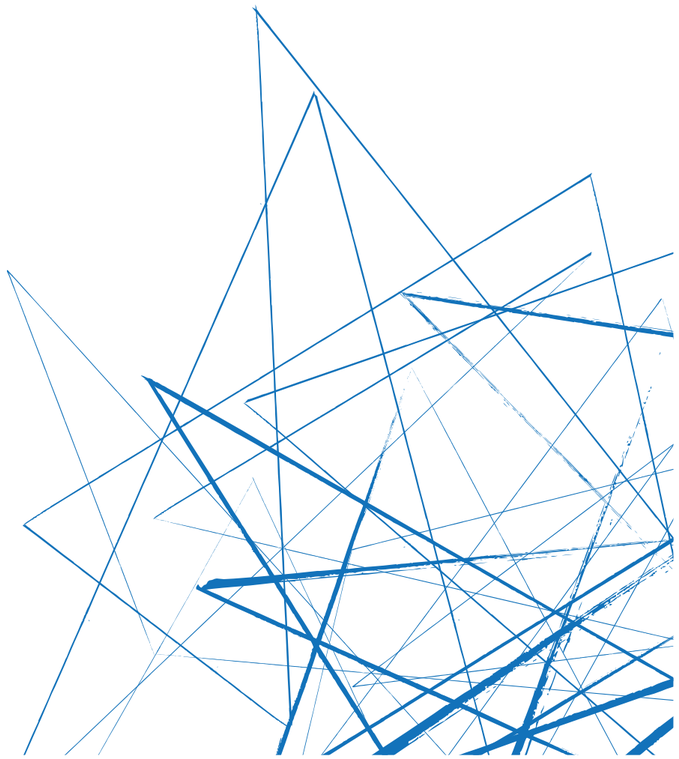

PhD Series 09.2021

Søren Bering

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CBS COPENHAGEN BUSINESS SCHOOL
HANDELSHØJSKOLEN

“Manufacturing, Forward Integration and Governance Strategy”

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The CBS PhD School is an active and international research environment at Copenhagen Business School for PhD students working on theoretical and empirical research projects, including interdisciplinary ones, related to economics and the organisation and management of private businesses, as well as public and voluntary institutions, at business, industry and country level.

PREFACE

The thesis consists of an introductory chapter followed by four chapters and a final section that summarized and concludes. The four chapters, which make up the bulk of the thesis, each address the topic of forward integration and governance from theoretical and empirical perspectives. Chapter provides an introduction to the thesis as well as the motivation for inquiring into the overall research question. Chapter 2 explores into value chains with a particular focus on what role different downstream distribution types play in relation to upstream manufacturing. It then takes stake of the current literature in relation to firm boundaries and the decision to integrate forward and uncovers contextual conflicting differences relating to the decision to integrate forward. Chapter 3 addresses different governance challenges relating to contextual distribution differences following the decision to integrate forward. Chapter 4 is a case study of governance mechanisms inside a major European manufacturing company that has struggled to turn strategy of forward integration into industry leading profits. Chapter 5 is a comparative case study of governance mechanisms between two forward integrated manufacturing firms where one firm, over an extended period of time, constantly has outperformed the other in terms of growth and profits. While the four chapters can be read individually they are, in the context of this thesis, seen as a progression from both a research as well as a managerial perspective towards answering some of the question that relates to successful forward integration. The final chapter summarizes the findings of the chapters 2 – 5, the research papers, in relation the purpose of the thesis and guiding research question. The research papers included are as listed below:

- Bering, S. (2020a): The Rationales of Forward Integration: Analyzing the Relationship Between Manufacturing and Distribution
- Bering, S. (2020b): Forward Integration: The Governance of Interdependencies Between Manufacturing and Distribution
- Bering, S. (2020c): Forward Integration from Manufacturing to Sales and Distribution: A Case-Based Study
- Bering, S. and Andersen, T. J. (2020): Forward Integration in Manufacturing: A Comparative Case Study of Governance Mechanisms

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To be given the opportunity to embark on a PhD in the middle of a corporate career is no easy task – I have learned this the hard way. However, I want to thank Copenhagen Business School, and the department of Strategy and Innovation, for allowing me to exploit my professional curiosity in and academic context. Though I have not been the most frequent guest at the department I have met some very inspirational and engaging people, Professor Madeleine Rauch immediately comes to mind, who has taken the time to provide qualitative research guidance for this thesis. I also want to thank my previous employer MAN Truck and Bus A/S, and in particular Bård Stenberg, who supported and made this thesis financially and timewise possible. Finally, I am grateful to my friends and family, especially my kids Rasmus and Emilie – who in the meantime no longer are kids, whose patience, support and understanding made this possible.

ABSTRACT

In value chains the purpose of the different industry stages, with discrete resources and capabilities, is to transform raw material into final products and services in markets for end-users. In this context manufacturing firms face increasing pressure on generated profits. As national economies develop so does the importance of service related activities which present an opportunity for manufacturers to compensate declining profits by integrating forward. However, when manufacturing firms contemplate forward integration this presents challenges that are different to those they face when marketing own manufactured products. The theoretical rationales applied to help analyze the economic effects from forward integration are complex and sometimes provide conflicting recommendations. The related challenges, when substituting market transaction with a hierarchy, are supported by the empirical literature on manufacturers' forward integration that shows very different profitability effects. Hence, for manufacturing firms to integrate forward into distribution and services this requires consideration of different economic rationales that not always work in concert but also the implementation of according governance mechanisms to ensure economic profits. The purpose of this PhD is to inquire into **"how forward integrated manufacturing firms effectively govern their integrated distribution activities under different market conditions"?**

To answer this question, this study begins by analyzing the complexity of value chains and what separates the different industry stages. To understand the challenges related to forward integration two streams of literature is synthesized. This relates to the theoretical and empirical boundary literature as well as lead firms within global value chains. From this, two distribution archetypes, directional and complex distribution, in addition to spot market transactions, is condensed and the corresponding interdependency differences are presented in chapter two. Chapter three progresses the discussion by considering the interdependency differences and what are the governance implications following forward integration. These first two chapters provide guidance to inductively collect data related to forward integration and governance. To understand the initial integration rationale and governance today, governance is here considered more in its wholeness. A qualitative case study methodology serves as the foundation for collecting data by using two manufacturing firms within the same industry that both have pursued a strategy of forward integration but with vastly different performance. The study show that while forward integration can be very challenging it can also, when governance instruments are aligned to the distribution context, provide sustained competitive advantages.

SAMMENFATNING

Formålet med industrielle værdikæder er at forskellige firmaer, hver med egne bestemte resurser og kompetencer, kan forandre input af råvarer til færdige produkter og services bestemt for salg til slutbrugere. I denne industrielle kontekst oplever stadig flere produktionsvirksomheder stigende pres på deres økonomiske overskud. I takt med den økonomiske udvikling, stiger service sektorens andel af brutto national produktet også. Dette giver produktionsvirksomheder en mulighed for at kompensere deres nedadgående overskud ved at integrere fremad i værdikæden. Desværre er de udfordringer som produktionsvirksomheder vil stå overfor ved integration af services og distribution anderledes end dem som opleves i eksisterede produktmarkeder. De teoretiske rationaler, der skal hjælpe med at analysere de økonomiske effekter af integration, er komplekse og giver ofte modstridende vejledning in relation til beslutningen om at integrere distribution og services. Udfordringer som firmaer står overfor, når de går fra kontraktuelle markedstransaktioner til organisatoriske hierarkier, bekræftes af den eksisterende akademiske litteratur som påpeger meget forskellige økonomiske resultater blandt firmaer som her integreret fremad i værdikæden. Produktionsvirksomheder der integrerer fremad skal derfor grundigt overveje de forskellige, og ikke altid ensartede retningsgivende økonomiske effekter, samt de koordinerende styringsmekanismer som skal implementeres for at sikre økonomisk overskud fra fremadrettet integration. Formålet med denne PhD er derfor at undersøge hvordan **"produktionsvirksomheder der har integreret fremad effektivt styrer den integrerede distribution under forskellige markedskonditioner"?**

For at svare på dette spørgsmål, begynder dette studie med en analyse af kompleksiteten af forskellige værdi kæder samt hvad separerer de forskellige industrielle sektorer. For at illustrere udfordringerne fra fremadrettet integration benyttes to forskellige teoretiske perspektiver. Disse relaterer til de teoretiske og empiriske udfordringer der definerer firmaers aktiviteter samt den rolle ledende firmaer i globale værdikæder påtager sig. Ud fra dette udeledes to distributions ærketyper, retningsgivende distribution samt kompleks distribution, i tillæg til alm. spotmarkeds handel, og hvor de forskelige indbyrdes afhængigheder præsenteres. Kapitel tre fokuserer på de forskellige indbyrdes afhængigheder i relation til distributionstyperne, retningsgivende- og kompleks distribution, samt implikationerne for de koordinerende styringsmekanismer for integrerede virksomheder. Disse to første kapitler danner derfor grundlag for induktivt at samle data relaterende til fremadrettet integration samt interne styringsmekanismer. For at forstå integrations rationaler og de styringsmekanismer der bruges i dag bliver styringsmekanismer

betragtet som et mere aggregeret begreb. Et kvalitativt 'case study' metodik bruges til at samle data fra to produktionsvirksomheder der begge har fulgt en strategi om fremadrettet integration, og som konkurrerer indenfor samme industri men med vidt forskellig resultater. Studiet viser, at fremadrettet integration kan være meget komplekst og udfordrende, men også, at når interne styringsmekanismer justeres til rette distributions type kan dette give varige konkurrencefordele.

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CHAPTER 1:

INTRODUCTION

The motivation for engaging in this (industrial) PhD is rooted in my own employment inside large forward integrated manufacturing and transportation firms. In this environment I often found myself, but also colleagues, puzzled and frustrated by the internal dynamics between headquarters and local operations. Phrases like "don't try to understand it – its headquarters' rationale", "volume forgives" and "satisfying my boss is the most important", "I wouldn't do this if it was my businesses" were often heard. On the extreme, one foreign managing director of a national distribution company expressed local governance rationales and the road to personal success along these lines: *'the first year an MD blames his poor results on his predecessor. The second year he shows headquarters what he can do as the basis for future promotion. The third year he prepares the fall of his successor to show his own superior capabilities.*' Employees representing headquarter also expressed skepticism about the dynamics that governed between headquarters and local operation while at the same time didn't want to "rock the boat". At the same time I also observed companies within the same industry, following the same strategy of forward integration, but with a significantly better performance. In the following I will briefly describe some of these personal observations that sparked my curiosity and led me to embark on this thesis.

Local managing directors and finance directors predominantly came from the same nationality as the manufacturing headquarters. While the finance directors understandably had a finance background, managing directors usually came with a commercial or sales background and very rarely with a service background. This also has to be seen in contrast to the background of CEOs at headquarters who predominantly had a manufacturing or R&D background. Given the often expressed importance of customer orientation within complex and dynamic market settings, this constellation of competences did not seemed logical and the operational dynamics became visible in several areas.

When comparing different performance indicators between wholly-owned subsidiaries and private distributors, the private distributors clearly performed better. The selling prices, and profits, to end-users were significantly higher among the private distributors. This was due to

several factors. Wholly-owned distributors sold a larger share of vehicles to large fleet owners with repair and maintenance as well as buy-back[1] obligations. This meant taking over future risk that usually rested within the user/buyer. Private distributors focused more on customers where the aftersales revenue potential was higher and where product commodification was low, that is, a customer and product mix targeted smaller and more specific customer use. Private distributors, on average, also outperformed wholly-owned distributors in customer relation surveys. Apparently private distributors knew that to harvest future profit potential from the higher complexity of vehicles sold, it was imperative to maintain good customer relationships and loyalty. Lastly, private distributors clearly remarketed used vehicles locally to seize the profit potential of older vehicles, whereas wholly-owned subsidiaries exported used vehicles to ”remove” an obstacle taking focus away from the sale of new vehicles.

The last logic inference relates to the operation of national business units that had the formal status of a profit center. While much of the public debate around transfer pricing and multinationals relate to tax optimization, the negative operating margins inside national operations seemed to be related to something else than tax avoidance. The delegated targets, that are visible in the national budgets, always seemed to be extremely ambitious. National management after engaged in something which was supposed to resemble a negotiation with agreed targets often reduced local targets to second level managers because the ”negotiated” targets were considered unachievable. Further, when these very ambitious targets were considered unachievable the question arises ”how and what to prioritize”? In this case the sold volume and fixed cost control always took first priority at the expense of future investments and profits. Managers which achieved their budgeted volume and market share but not profits were never fired indicating that the marginal revenue inside headquarters from additional sale was higher than the local losses. This also meant, that local management quickly learned that when headquarters does not complain or fire employees from making local losses, as long as volume targets were met, this indicated that marginal profit inside headquarters was high - effectively diluting the notion of local profit centers.

[1] Buy-back is a contractual obligation normally used within operational lease. In operational lease the seller invoice the user a monthly fee for the use of an asset comprised of the depreciation between the selling price of the asset and the residual value of the asset (buy-back price) at the end of use; interest rate; the attached repair and maintenance costs in the agreed period of lease.

Forward Integration and History

From the industrial revolution until the middle of the 19th century, manufacturing companies engaged primarily, if not solely, in manufacturing activities (Schmenner, 2009). However, with the introduction of new technologies like the railroad, communication technologies like the telegraph, and more, this presented opportunities for manufacturing companies to expand their general business reach along the value chain. Alfred Chandler in his historical work "The Visible Hand" (1977) argues that today's modern business enterprise began their expansion through *vertical integration* and thereby internalizing activities and transactions that were previously carried out by a number of separate and segregated business entities. Internalizing business activities and transactions along firms' value chains, generally known as vertical integration and often associated with the "make or buy" decisions, can take two directions. As Harrigan (1986, ; 536) states: "vertical integration involves *upstream* (or *downstream)* arrangements between sister business units to provide raw or semi-processed materials, components or services to (or purchase outputs from or act as distributors for) each other." In other words, vertical integration can entail backwards and forward moves along the value chain activities.

Free markets and capitalism have often been hailed as for their effective ability to allocate resources and providing strong incentives related to capital investment (Hayek, 1945). This includes segregated ownership of the different industry stages along value chains. However, there are times when a centralized hierarchy can operate integrated value chains more efficiently (and profitably) than decentralized market mechanisms. Three early explanation for forward integration are identified from Chandler's work (1977, 1990), Schmenner (2009) : 1) Commodity titans, like Rockefeller's Standard Oil, who use forward integration to increase barriers to competition, hereby protecting their own profits, 2) Novel, high volume processors, like Gustavo Swift (slaughterhouses, meatpacking and selling) who use innovation in distribution technology like refrigerated railroad carriages and warehouses to move production closer to the western breeding grounds and 3) Supply chain innovators, where manufacturing companies' needed access to downstream retail, repair, and financing services to complement the manufactured product. This business concept rested upon resources and competences developed in the manufacturing entity that were successfully expanded across a larger geographical area. This included companies like Singer Corporation (sewing machines), McCormich mechanical reapers (later International Harvester) but also some of today's giant

conglomerates like Westinghouse Electric Corporation and General Electric. While the first integrative moves were a demonstration of Industrial Organization arguments to restrict competitors and avoid dilution of profits (e.g., Bain, 1968; Porter, 1979), other approaches demonstrated how innovation in forward integration towards distribution can provide competitive advantages. These efforts attempted to circumvent what Chandler (1977: 287) as well as Porter and Livesay (1971: 166) referred to as "inadequacies of existing marketers." Teece (1986) further argued that "after-sales service" are complementary to the tangible product is often needed to capture value from manufactured product innovations. This shows the emergence of long-linked sequential interdependency (Thompson, 1967).

A closer examination of the more recent literature reveals that vertical integration has become a much more complex theme since its gradual emergence following the industrial revolution. This is illustrated by the numerous and often different economic interpretations of the underlying issues, usually shaped by the adopted theoretical perspective. Blair and Kaserman (1983: 11) argue that a firm engages in vertical integration when it "transmits a good or service which could, without major adaptations, be sold in the market" and Porter (1980) defines it as "the definition of technologically distinct production, distribution, selling, and/or other economic processes within the confines of a single firm." Riordan (2008: 150) refers to this as: "the organization of successive production processes within a single firm, a firm being an entity that produces goods and services." which resembles Thompson's (1967: 15) "a long-linked technology involves serial interdependence in the sense that act Z can be performed only after successful completion of act Y, which in turn rests o act X". In contrast, Grossman and Hart (1986) analyze the integrated firm in the perspective of unified ownership and therefore control of assets used for production. It seems clear, that organizing activities within firms can have economic advantages. Nobel laureate Herbert Simon (1991) described how a mythical visitor from Mars would find that most economical activities are made within and between divisions and departments of the same integrated firm. Accordingly, McMillan (2002) estimated that even in market oriented economies like the U.S.A., internal transfers would account for over 70% of all business transactions, which seems to provide support for the effectiveness of large integrated organizations.

There are also other perspectives that distinguish the discussion of forward integration from the general discussion of vertical integration. This relates to the complexity of final product

markets and the manufacturer's proximity to the markets, the structure and use of specific investment in specialized downstream resources, and the consolidation of final revenues and profits along the integrated value chain (Figure 1.1).

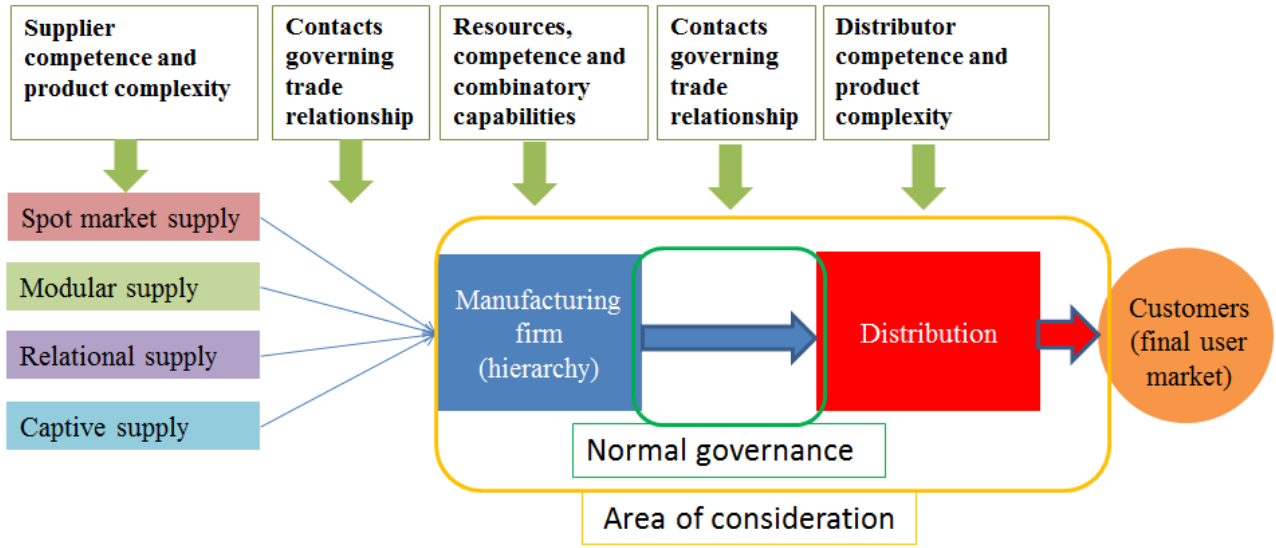


Figure 1.1 Vertical Value Chains – The Role of Distribution in Forward Integration.

Note: The full value chain illustrates different sources of supply to manufacturing, which in turn delivers to downstream distribution that reach the customers in the final product markets. The analysis of forward integration attempts to understand the governance of manufacturing and distribution into the complexity of end-user markets (yellow area with overlap into customers) in contrast to the contractual relationships between them (green area).

It is necessary to distinguish between backward and forward integration since the two types of vertical integration differ in important ways. Backward integration can secure the ownership to the sources of various inputs from suppliers, which increases the ability to influence the specific types of inputs required by manufacturing while manufacturing remains the final entity to register total revenues as the natural (and controlling) profit center. In contrast, forward integration moves towards controlling the distributors that are closer to the final markets, therefore possessing much of the essential customer intelligence needed to produce competitive products. This can potentially dilute the power of manufacturing due to the dependency on specific knowledge in distribution, which is now also the last point of revenue collection. So, forward integration must be separated from the general discussion of vertical integration to fully

understand and inquire into the economic rationales associated with the governance of forward integration. In forward integration, managers must address the tradeoffs between contractual market transactions and a more complete view of the integrated organization – including power delegation, managerial control systems, and internal incentive structures. In this context Alfaro et al. (2018) point to the limited attention given to the interplay between firm boundaries and the allocation of decision-making rights inside the firm. Baines et al. (2017) point to a similar problem arguing that manufacturers' transformation towards more service oriented offerings requires much more attention, especially in the area of the internal conditions needed to grow revenue and profits.

This thesis is about the manufacturing firm's decision to integrate forward into distribution. Looking at the 'real world,' forward integration continues to be the common approach in consolidating manufacturing industries, so the topic of effective forward integration is as relevant as ever. However, it is striking to note the distinct performance differences that prevail across firms that pursue similar strategies on forward integration, which point to some underlying issues regarding more or less effective ways to govern the forward integrated firms. While the "black box" perspective of traditional Industrial Organizations theory can provide some help to understand forward integration, it seems that these normative prescriptions are insufficient when less stringent and straightforward circumstances prevail. This fundamentally means that we need to consider how segregated ownership (with market incentives) are affected by the change towards hierarchical coordination of the interdependencies between the integrated manufacturing and distribution activities.

All manufacturing firms, no matter their size, eventually need to sell their production. Like lead firms in global supply chains (Gereffi et al., 2005, 2018; Gibbon *et al*., 2008), manufacturing firms develop capabilities and resources (Nooteboom, 2004; Teece, 2010) to transform different types of supply into final outputs (Figure 1.1) that cater to different types of distribution. In its most simple form, distribution is accomplished by having a small sales department attached to the production and then selling to the adjacent downstream industry in simple spot market transactions. More complicated distribution types involve contractual relationships that govern the interdependency between the manufacturer and the adjacent firms responsible for the distribution. The kind of interdependency considered here is one where the manufacturer's product remains a main component in further downstream product markets of

the final users, and where the manufacturer relies on the downstream distributors to provide selling and supportive activities into the final markets. Sometimes the manufacturer's product does not require any further alterations to be user ready like a standard piece of furniture, like a chair for home use. At other times, it can take on more complex characteristics, say a kitchen where the manufacturer's product requires additional value adding activities like an architect, a carpenter, and various auxiliary services interacting with the end-user to ensure a satisfactory use.

While these examples are simple and benign, they serve to illustrate different types of roles and dependencies between manufacturing and the distribution of products. The examples above also illustrate the difference in complexity of required resources and competences within distribution to make the manufacturer's product user ready and competitive in the market (Gereffi et al., 2005, 2018). When the downstream distribution investments and value adding activities are straightforward, they are easy to describe in processes and incorporate contractually. However, when the value adding activities of the distribution are based on idiosyncratic knowledge and resources, the codification that is needed to specify product complexity and contracts become increasingly difficult (ibid). Hence, Teece (1982) reminds us that capabilities and resources located upstream from the firm are potentially further away from the final product markets, so it is critical to ask how far away and consider the implications.

Sequential Interdependency, Incentive Misalignment, and Contracts

An important starting point seems to be an inquiry into the (potential) advantages of forward integration – after all, history has proven that it can be a successful strategy. To begin with, the segregated ownership of assets associated with markets provides multiple sources of incentive misalignment and opportunism, which are central to the following argumentation.

Segregated ownership of manufacturing and distribution implies contractual arrangements between these interdependent business entities along the (industry) value chain. The type of relationship here is one where contractual arrangements govern the interdependency between the manufacturing and distribution entities (Lafontaine and Raynaud, 2000). This includes investment in relationship specific assets and required activities in the distribution entities (Grossman and Hart, 1986; Klein, Crawford and Alchian, 1978; Williamson, 1979) that are

predominantly specified by the manufacturer. While this might resemble common franchise contracts, this is not quite the case. The contractual specifications derived here are different from the fundamental transformation that Williamson (1985) describes, where trading parties over time develop mutually specific assets. Nonetheless, these specified contractual investments still have higher value inside the relationship than outside (Klein, Crawford and Alchian, 1978; Williamson, 1979). This means that while contracts still are exposed to opportunism from the trading partner, there are other contractual considerations.

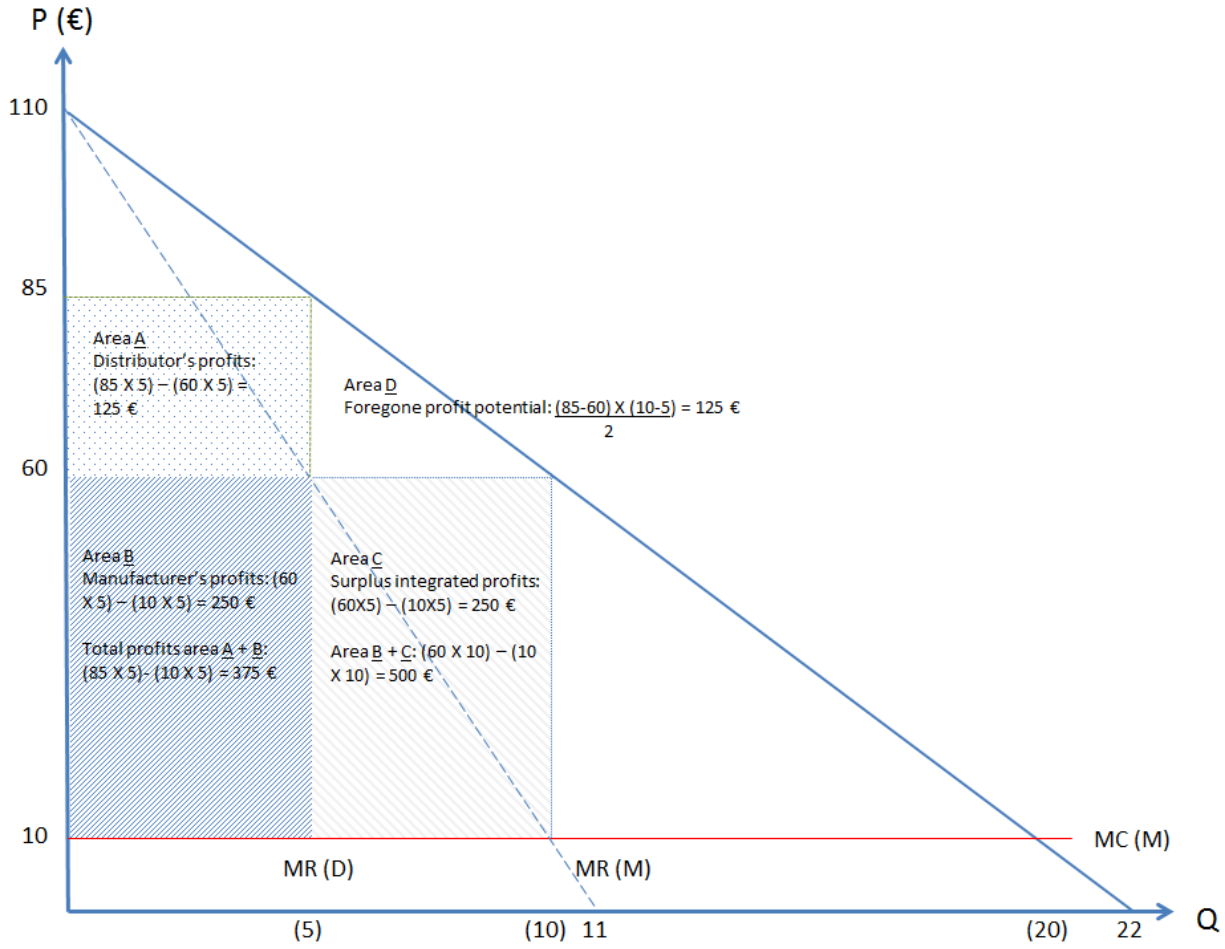
The contracts also serve to allocate responsibility, and in some instances, also to reduce incentive misalignment. This relates both to incentivizing the adjacent distribution partners to invest in specific assets as well as activities that benefit the optimal volume and profit position of the manufacturer. With the creation of downstream contractual relations – where the manufacturer sells the intermediate product to downstream contractually engaged distributors that have made specific investments – this creates a sequential monopoly (Blair and Kaserman, 1983; Eccles, 1985; Tirole, 1988). That is, they become so mutually specialized that they depend on each other, and thus effectively take monopoly positions as the only (viable) partners. So, the manufacturer's price of the intermediate product is now the sourcing price of the downstream distributors.

This presents a very simple setting that can further the understanding of the resulting incentive misalignment. Let's further assume that the aggregated efforts of manufacturing and distribution creates a demand in the final product market with a relationship between price and quantity as represented by the demand function: P(rice)=110 - 5Q(uantity) (Figure 2.2; solid blue line). Let's further assume that the manufacturers cost pr. unit of the current products is 10 € (Figure 2.2; solid red line). To maximize own profits, the manufacturer will set marginal revenue equal to marginal cost, MR = MCm (Pindyck and Rubinfelt, 2013). This creates the manufacturer's profit maximizing quantity of 10 at a selling price of the intermediate product to the distributors of 60€ (where the dashed blue line 'MR' intersects with MCm at quantity 10). The distributors who also want to optimize own profits will use the same methodology setting marginal revenue equal to their marginal cost (MR=MCd). The same 60€, that is the distributors' purchase price of the intermediate goods (Cd) will yield a profit optimizing quantity of 5[2]. With a final market demand function P=110 - 5Q this gives the distributors a

[2] MR=MCd (110 – 10Q = 60€)

final market profit optimizing selling price of 85€ and an aggregated margin of 125€ (see calculations in Figure 1.2 – area A).

The important thing to note here is that this (reduced) quantity of the distributors will also be the manufacturer's quantity. This effectively creates aggregated profits within the contractual partnership of 375€ (area A (Pd), 125 + area B (Pm), 250). It has to be compared with the situation, where this was an integrated firm. In that case, the optimal quantity would be 10 at a price of 60€ with total profits of 500€. So, two sequential (monopolistic) firms each seeking to optimize own profits forgoes a total aggregated profit potential of 125 € (500 – 375 (area D)) (Figure 1.2). This challenge, is known as the 'double marginalization' problem, which often in the industrial organization literature is used to recommend vertical integration (Brickley et al., 2015; Eccles, 1985; Pindyck and Rubinfeld, 2013; Riordan, 2008).

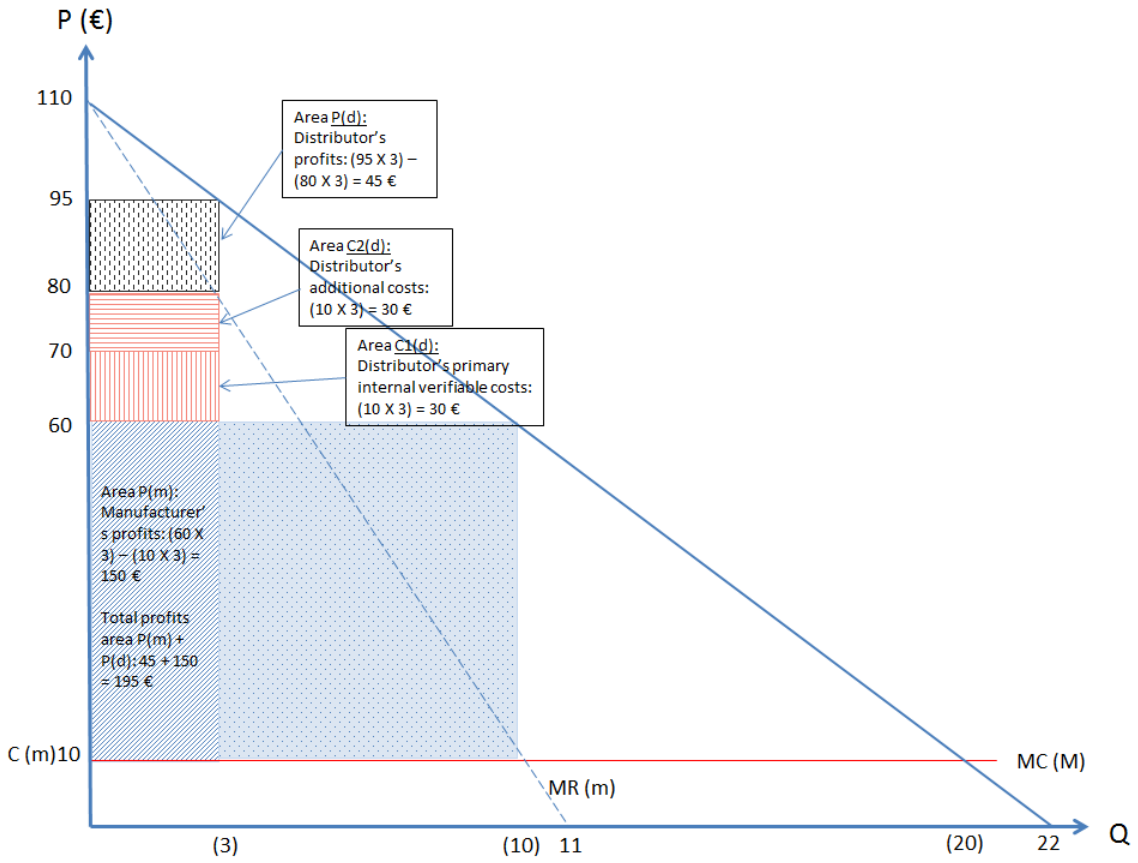


Source: Adapted from Brickley, Smith and Zimmerman (2015).

Figure 1.2 The Price-Quantity Positions of a Monopolistic Supplier and Sequential Distributors where Transfer is Mandatory

If we expand the sequential monopoly to include other costs in the distribution, this will only exacerbate the incentive and profit misalignment issue. Using the samt demand fuction and marginal cost of the manufacturer (MCm) as before, the manufacturer will retain the selling price of the manufactured good at 60€. If the distributor, in addition to the purchase price, has variable costs of 10 € (e.g., sales commision, marketing), and these cost can distributed by an activity based costing method (Zimmerman, 2011) and verified by the manufacturer, this amounts to area C1(d) in Figure 1.3. Assume that the distributor adds further discretionary costs of 10€ pr. sold unit (Area C2(d)), which could be perks like traveling 1st class, using better hotels, higher perdiem, etc., then the distributors marginal costs (MCd) are now 80€. This will

lead to a new profit optimizing quantity for the distributors of just 3 units. Total aggregated profits from this scenario are 195€ (see Figure 1.3).



Note: Distributon cost consists of the intermediaty manufactured product and two other types of internal distributon costs.

Figure 1.3 Segregated Ownership of Manufacturing and Distributon.

If the 'unnecessary' cost (C2(d)) can be detected and removed through internal controls as the manufactuer acquires the distributors and integrates forward, and the selling expenses (C1(d)) are absorbed by the manufacturer, the firm's profit accounts would look much better (Figure 1.4). To optimize profits the integrated manufacturer will set MR=MC (integrated enterprice)[3] leading an optimal quantity produced of 9. The aggregated profits of the integrated manufacturer is now 405€ - a considerable increase that justifies the integration from reducing incentive misalignments.

[3] MR=MCd (110 – 10Q = 20€)

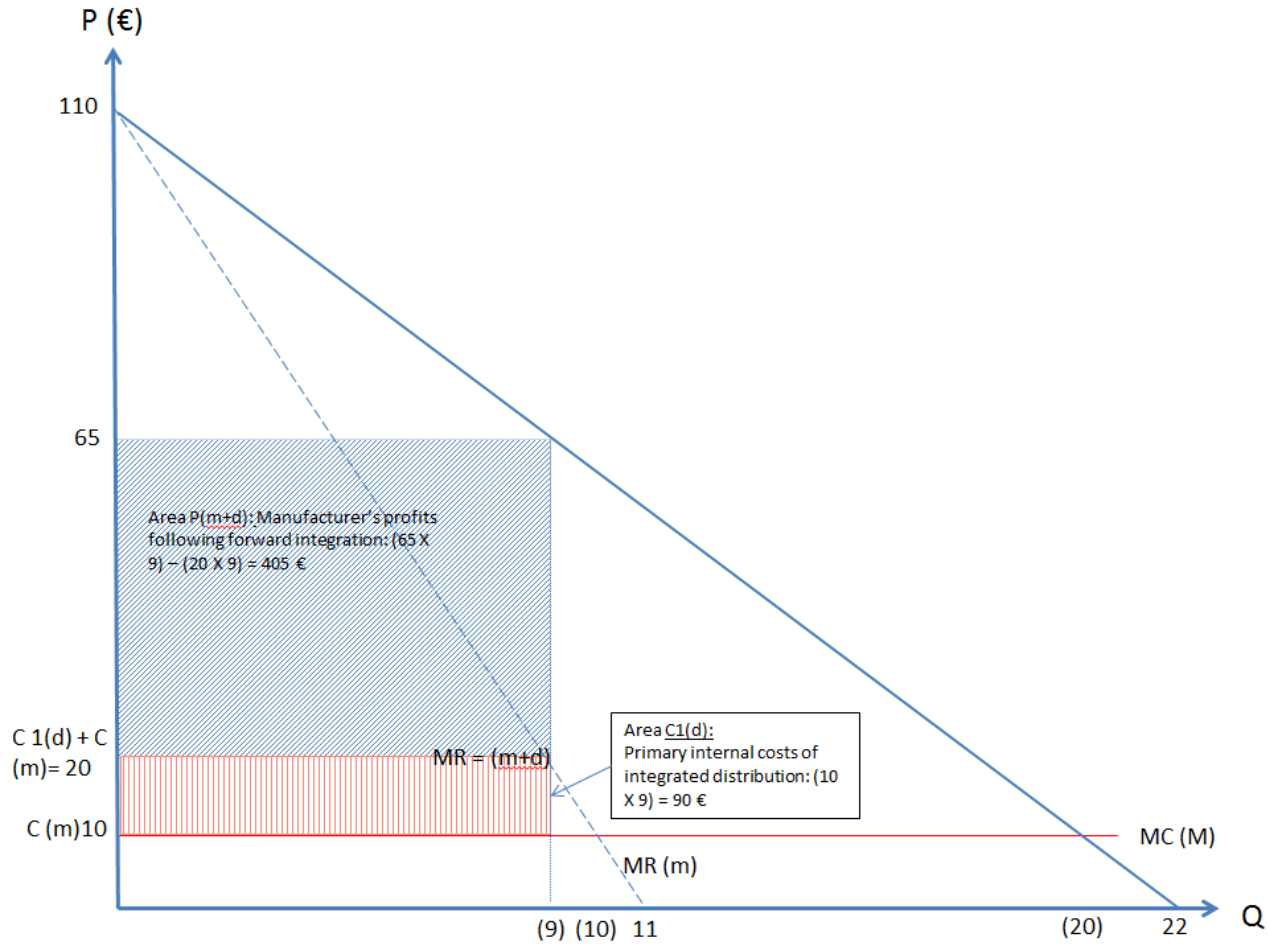


Figure 1.4 Vertically Integrated Enterprice where Manufacturing Optimizes Distribution Costs.

However, this prior analysis assumed a given demand curve. But, what happens if the demand curve is influenced by the distinct effort that creates the distribution costs (area C2(d)) (Figure 1.5)? It may actually add value to the product offering so it pushes the demand function outward to a new function of P=130 – 5Q. Now, this would change the situation dramatically. If the integrated distribution adds value and increases demand, this would lead to combined profits of 500€[4] from a quantiry of 10 – more than the 405€ if the distributors' costs (C2(d)) are assumed to be unproductive (Figure 1.5). The question remains; what will happen to the dowstream effort in distribution entities after integration, if the company disregards (or forgets) the potentially positive effects of the addedd distribution costs? The answer seems to be, that the company then will forego an incremental profit potential. Well, this is a fundamental consideration when manufacturing firms integrate forward.

[4] MR=MC ((C(m)+C1(d)+C2(d)) = 130 – 10Q = 30€

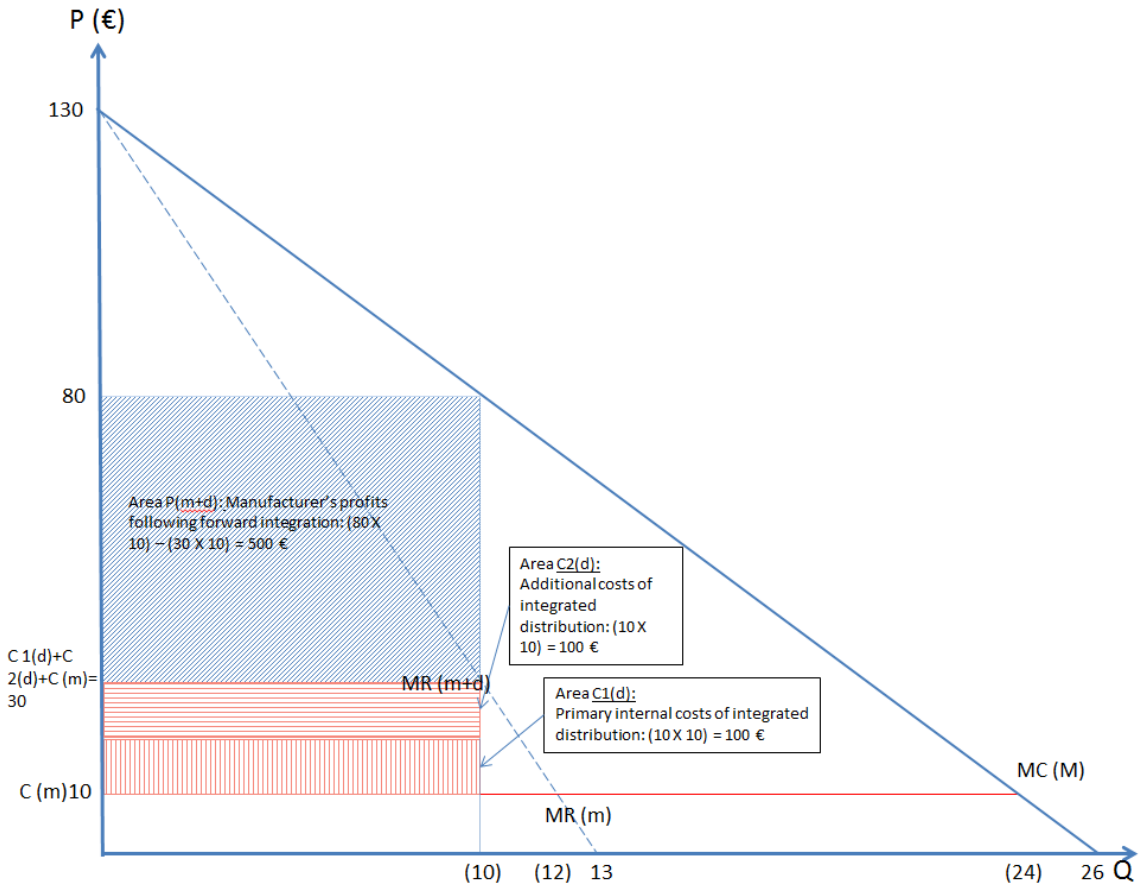


Figure 1.5 Vertically Integrated Enterprise where the Distribution Costs Add Value and Increases Total Demand for the Final Product.

While these examples are somewhat technichal, they illustate that there can be costs associated with transacting between segregated business firms across markets. They relate to incentive misalignment between two sequential monopolies, where the firms co-specialize and therefore become dependent on each other as the only market actors. The manufacturer may therefore seek to limit these effects using various contractual mechanisms (Klein, 1995; Lafontaine and Raynaud, 2000) but this has other potential implications. The usual perspective from industrial organization is that causality runs vertical integration to prices. That is, vertical integration will reduce costs and therefore prices (e.g., Blair and Kaserman, 1985). Alfaro et al., (2016), however claiming that that there is a force running in the opposite direction. This means that increasing price competiton in the market for end-users will lead to more vertital integration to reduce incentive misalignment and ultimately improve economy of scale as the examples also show.

While this discussion provides ample rationales and examples to promote forward integration, there still remains the question as to whether these costs will somehow diminish and thereby outweigh the cost of market transfers after integration process is completed. The empirical literature provides evidence of opportunism between segregated firms but we also know that opportunism can exist between entities within the integrated firms as well (Alchian and Demsetz, 1972; Gibbons, 2010; Holmström and Milgrom, 1991, Lafontaine and Slade, 2007; Rosen, 1991). If vertically integrated firms are shielded from outside competition and market pressures, they may also become complacent and less effective (D'Aveni and Ravenscraft, 1994; Jacobides and Billinger, 2006). Another related question of relevance is how integration affects product innovation as Harrigan (1986) discussed. That is, if forward integration is merely a step to avoid double marginalization, or the integration leads to centralization and commodification of products, the distribution stops to add value. The latter case poses a governance issue that resembles what Demsetz (1988) calls 'perfect centralization.'

Why do Firms Integrate and How Does it Influence Governance?

From the history of forward integration, it appears that different situations make common ownership a more economically attractive alternative to market transactions. This means there must be situations where certain economic integration rationales cater more to resolving specific transaction cost problems across the long-linked value chain activities, but both successful and unsuccessful implementation of the forward integration strategies can be observed.

Research over prior decades has made much progress to explain the economic rationales behind the decision to integrate activities along the value chain. These economic perspectives can roughly be divided into two categories, each aimed at addressing different costs (Winter, 1991). The first category addresses costs related to transactions made across markets (e.g. Alchian and Demsetz, 1972; Arrow, 1969; Coase, 1937; Klein, Crawford and Alchian, 1978; Grosman and Hart, 1986; Jensen and Meckling, 1976; Simon, 1951; Williamson, 1971, 1979, 1985). The second category addresses internal efficiencies like economies of scale and scope, and effects of specific resources (e.g. Bain, 1958; Barney, 1991, 1999; Connor, 1991; Demsetz, 1988; Kogut and Zander, 1992; Penrose, 1959; Wernerfelt, 1984; Nelson and Winter, 1982; Porter, 1979; Teece et al, 1997; Tirole, 1988).

Empirically the predominant view for analyzing the forward integration decision has relied on moral hazard and agency theory (Lafontaine and Slade, 2007). This stream of literature has consistently argued that when market transaction costs for monitoring and direct incentives are high, as illustrated with the transition from Figure 1.3 to 1.4 above, then forward integration is preferred (e.g. Anderson and Schmittlein, 1984; Anderson, 1985; Brickley and Dark, 1987; John and Weitz, 1988). It essentially argues that access to more accurate internal monitoring and metering of performance will increase performance. In contrast, the imprecise monitoring of segregated asset ownership is accepted when the manufacturing is dependent on performance from the distributions' use of idiosyncratic resources and specific market knowledge (Brickley and Dark, 1987; Norton, 1988; Lafontaine, 1992; Baker and Hubbard, 2004; Brickley, Linck and Smith, 2004; Woodruff, 2004). This suggests that firms find it difficult to provide the same incentives internally as segregated ownership, and that the costs of integration therefore outweigh the costs of incentive misalignment and market transactions. In short, monitoring and controls to reduce moral hazard do not work when entrepreneurial efforts from downstream distribution resources are important to the value creation of the integrated enterprise.

Since the purpose of this thesis is to inquire into the governance of forward integration, it cannot ignore the fact that some theories of the firm implicitly assume that costs remain unchanged with integration when the reality often show that they do not (Gibbons, 2010; Rosen, 1991; Williamson (1971, 1998). This is a dilemma that might relate to the specific conditions that prevail in a multitasking distribution environment (Holmström and Milgrom, 1991; Shepard, 1993; Slade, 1996) where both the manufacturer's tangible goods and the services attached create value. While integration can solve incentive misalignments related to the manufactured tangible product, it can potentially be ineffective if the success of sales depends on idiosyncratic resources and knowledge in the distribution. The main point that can be assumed is if a company today addresses one factor related to costs from transactions across markets and base integration on this – can it then assume that the well-intentional integration rationale is not accompanied by the unintentional procession and (mis)use of authority from property rights (Alchian, 1990)?

These issues leave manufacturing firms that contemplate forward integration into distribution with major (unanswered) queries as to how they should govern the ex post acquisition challenges. These challenges and underlying tensions vary depending on the role and

tasks pursued by distribution, as reflected in directional and complex distribution contexts and must be considered in the governance of forward integration.

Forward Integration the Allocation of Resources, Capabilities, and Risks.

When manufacturing firms extend their value chain forward into distribution, this may imply that the company extends activities beyond the core competencies associated with its existing business focus (Harrigan, 1986). Theoretical perspectives of resource-based competitive advantages (e.g. Barney, 1991, 1999; Connor, 1991; Demsetz, 1988; Penrose, 1959; Rumelt, 1991; Teece, Pisano and Schuen, 1997; Wernerfelt, 1984) argue that profitability depends more on the characteristics of internal recourses and their ability to preserve competitive advantages. Porter (1980) argues that vertical integration as a corporate strategy can internalize activities too much, cutting off the direct access to outside market intelligence that is needed to adapt market offerings and reduce exposures to new competition. Stretching the manufacturing firm's current capabilities towards new distribution activities may expose it to new strategic and operational risks. An integrated and stringently coordinated value chain of activities can reduce flexibility from capability imbalances along the value-chain (Buzzell, 1983; Blair and Kaserman, 1983; Harrigan, 1986). Essentially, this means that the different theoretical perspectives recognize the difficulty of integrating different strategic resources and capabilities along the value chain.

The division of resources and competence along the value chain is an area that has been addressed in different streams of literature. Oliver Williamson, who has arguably been the strongest proponent for using transaction cost economics to understand the division of firms along value chains, acknowledges that there are other factors to recognize to make integration successful. This relates to the different firms' pre-existing core competencies, capabilities, and resources. Integrated firms need to address the organization of activities between different departments with pre-existing strength and weaknesses (Williamson, 1998). This line of argumentation is more similar to scholars advocating evolutionary rationales for integration (e.g., Barney, 1999; Demsetz, 1988; Nooteboom, 2004; Winter, 1991). The basic argument is that firms integrate when they already have some degree of similar capabilities and knowledge in relation to the activities being integrated. In other words, there are important issue like operation, innovation, and renewal at play when manufacturing firms integrate forward. This evolutionary view suggests that the ability to engage in a 'degree' of renewal is an important determinant of where integration takes place and where it does not. This suggests that forward

integration into different resource and competence distinct business areas makes this increasingly complicated.

Similar challenges are highlighted in more recent 'servitization' literature, where complementary services are increasingly important in relation to the manufactured product (Baines et al., 2007; Mathieu, 2001; Oliva and Kallenberg, 2003; Tukker, 2004). This stream of research – much like the 'supply chain innovators' Schmenner (2009) – considers the role of downstream integrated service businesses in creating product advantages that lead to increased customer satisfaction and loyalty (Chandler, 1977, 1990; Lightfoot et al., 2013; Porter and Livesay, 1971). Indeed manufacturers' forward integration into services often prove a troublesome experience (e.g., Benedettini et al., 2014; Bustinza et al., 2015; Gebauer et al., 2005; Oliva and Kallenberg, 2003; Visnjic et. al., 2016). While the innovation in downstream services has been a growing trend, other studies highlight that innovation between tangible products and services may actually be counterproductive (Eggert et al. 2015; Gebauer, 2011). Still, with increasing importance of services in advanced national economies (EU Commission, 2017), the advice is still to integrate forward to circumvent the declining profits in traditional manufacturing (Neely, 2008; Visnjic et al., 2017; Vandermerwe and Rada, 1988; Wise and Baumgartner, 1999).

Prior empirical studies point to similar challenges. Engaging in forward activities that require unfamiliar management capabilities and knowledge increases the risk of bankruptcy (Ilinitch and Zeithaml, 1995**)** and increasing manufacturing costs from being shielded from the competitive market effects (D'Aveni and Ravenscraft, 1994; Jacobides and Billinger, 2006). In a longitudinal US-based study, Harrigan (1986) found that forward integrated firms with successful integration strategies generated more value from unique differentiated products using both upstream and downstream proprietary technology. In fact, the successful firms were more integrated when the value added provided by the distribution was high exploiting opportunities to strengthen the market position. In contrast, firms with unsuccessful forward integration strategies sold a greater proportion of outputs internally engaging in un-differentiated products.

Research Question

Given the rather undetermined prescription for the nontrivial issue to decision on forward integration in manufacturing, there appears to be some major gaps in our knowledge and insights about what constitutes effective and less effective ways to govern a forward integration strategy. One argument is often to improve the metering of internal agents to reduce moral hazard and incentive misalignment between activities along the integrated value chain. However, this seems to create new challenges in market dynamic contexts where specific investments and capabilities play an important for the value of the final products. Hence, this thesis seeks to understand the governance requirements imposed by more or less complex downstream distribution activities and market environments. The ability to manage forward integration effectively in these different distribution contexts shows widespread performance differences and a lack of clear theoretical guidance from the existing economic integration rationales. This suggests that successful forward integration relies on the internal governance approach adopted by the firm as a mediating factor to secure economic performance. This leads to the guiding research question of this thesis: **how do forward integrated manufacturing firms effectively govern their integrated distribution activities under different market conditions?** Given the trend within well developed economies for manufacturing firms to integrate forward into the growing service sector this research is both timely to practitioners as well as it provides needed theoretical contributions.

Adopted Methodology

To inquire into the governance of forward integration, this thesis first analyzes how product and market complexities affect the interdependencies between the different business centers and the integrated activities along different value chain stages (Figure 1.1). To create a deeper understanding of the challenges related to forward integration, various economic integration rationales adopted to guide the forward integration decision are compared and assessed – as well as the related empirical evidence is analyzed. Given the inconsistent advice provided by the extant literature on forward integration, the thesis proceeds to study the actual governance

approaches and mechanisms adopted by leading manufacturing firms to learn from the evidence this uncovers.

The setting for this qualitative study is the European truck manufacturing industry - a capital intensive and highly competitive industry with major consolidations in the 1970s and 1980s. Many companies went bankrupt or were acquired and today the European truck manufacturing industry only counts 7 major brands owned by 5 companies all being publicly traded and familiar household names like Daimler AG, Volvo Trucks, Volkswagen AG. Most of the manufacturers started integrating forward during the 1980s, first taking over national importers and later the distributors in the final product markets.

This adjacent distribution operates in a business to business environment with customer sizes ranging from single owner-drivers to large transport companies with more than 10,000 trucks in the fleet, and where user demand can be very different. This industry thrives on technical innovation in manufacturing as an important product feature but other specialized product and service factors also contribute to satisfy the products during their lifecycle among final users. This can be illustrated with the following quotes from field interviews with a major market operator (customer) and an executive representing a major truck manufacturer:

A large fleet operator stated: “actually, I don't care what truck I'm driving - the truck needs to be fit for purpose. And the service needs to be there. […]You can build the world's best truck in the world, every truck or bus or van has eventually an issue. And this is actually the key. And it shouldn't be production or engineering-focused. It needs to be customer, operator-focused.”

A senior vice president at a leading truck manufacturer addressed the importance of services this way: “as long as I can evaluate, the understanding has grown that after sales is creating a bigger part of [customer satisfaction and brand value] perception than sales. And, I myself, I'm telling everybody that we have more than five million customer contacts every year in after sales. So, I think the understanding that after sales is driving customer satisfaction even more than sales is there.”

In short, governing the entrepreneurial dimensions of the integrated distribution activities seems to play a major role for the successful forward integration from manufacturing.

Hence, the service elements of the final product seem to have a potentially significant impact on the purchase decisions and represent areas where distributors may be able to differentiate themselves against demanding customers in the market (Lightfoot et al., 2013).

The study of the governance of forward integration from manufacturing seems to constitute potentially important insights to explain differential performance outcomes. The extant empirical literature does not establish strong correlations between different governance approaches and forward integration (e.g., Anderson and Schmittlein, 1984; Anderson, 1985; Brickley and Dark, 1987; John and Weitz, 1988) but firm performance seem to depend on other factors than just controlling the integrated value chain activities (e.g., Harrigan, 1986; Woodruff, 2002). A qualitative case study approach was found pertinent to uncover actual practices to study the phenomenon of forward integration and governance in its wholeness (Welch et al., 2011; Yin, 2018). The data collection and analyses were partially guided by prior theoretical frames and issues, while staying open to learn from the collected observations in a guided inductive approach (Levy, 2008; Gioia et al., 2012). This approach allows proceeding from guided data to theoretical themes and aggregated dimensions of governance (Figure 2).

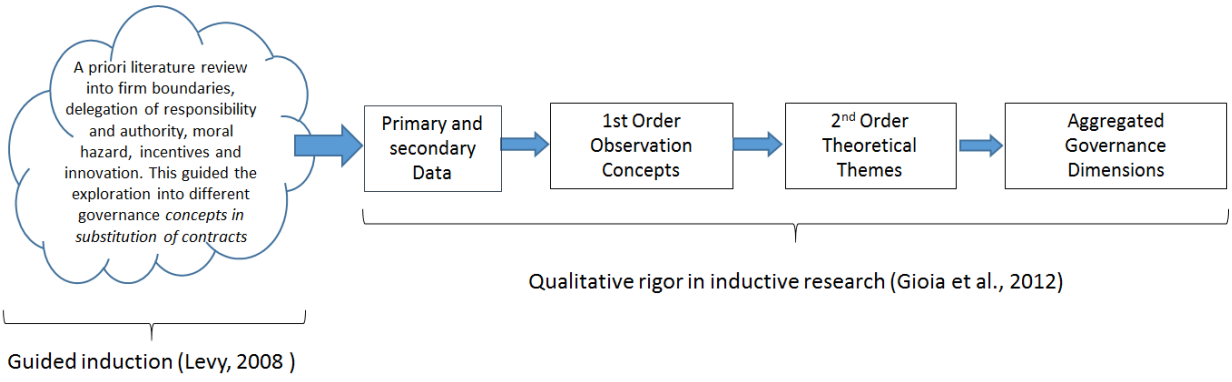


Figure 2. The Sequential Methodology of Guided Data Collection and Inductive Analysis.

Thesis Structure.

This thesis consists of four articles addressing different aspects of the forward integration issue that together attempt to answer the guiding research question. The first two articles are conceptual papers that outline the different theoretical perspectives applied in the study of forward integration, addressing important concepts and issue presented in the extant research on forward integration. The third and fourth articles present qualitative empirical studies seeking to uncover and understand important aspect of the governance of forward integration as applied by major international manufacturing firms in their real life contexts. The search process was guided by the knowledge gained in the preceding conceptual papers. These papers constitute chapters 2, 3, 4, and 5 in the thesis (Table 1.1). A final concluding chapter summarize the key findings from the four research contributions in the context of the guiding research question discussion the contributions and implications of the listed results as well as considering limitations and prospect for future research initiatives to complement and extend the current efforts.

Guiding Research Question "How do forward integrated manufacturing firms govern their integrated distribution operating under conditions of environmental uncertainty"		
Chapter	Paper title	Focus and objective
Chapter 2 (Paper 1)	Bering, S. (2020a), The Rationales of Forward Integration: Analyzing the Relationship Between Manufacturing and Distribution	This study presents the different technological stages of value chains and the role of distribution in different industrial settings. The paper presents the economic rationales typically adopted to analyze forward integration, and uncover some of the conflicting perspectives visible in different empirical studies. These insights are consolidated into the governance needs as applied to specific distribution contexts and provide guidance to forward integration.
Chapter 3 (Paper 2)	Bering, S. (2020b), Forward Integration: The Governance of Interdependencies Between Manufacturing and Distribution	The study considers the implications of different resources and capabilities distributed along the integrated value chain that challenge the governance of forward integration. To exploit the integration of resources for aggregated value creation, the governance approach must consider the long-linked interdependency between specific asset investments and their role in the integration of distribution. The analysis involves considerations about delegation of responsibility, authority to engage specialized resources and capabilities that previously were governed by segregated ownership of assets and contractual arrangement.
Chapter 4 (Paper 3)	Bering, S. (2020c), Forward Integration From Manufacturing to Sales and Distribution: A Case-Based Study	This is a detailed study of the governance approach adopted by a major forward integrated manufacturing firm that has displayed relatively mediocre performance outcomes. The company competes in a final end-user market characterized by diverse, specialized, and changing customer demands and legislative conditions. The uncovered different governance instruments used to coordinate the interdependencies between manufacturing and distribution are assessed in view of the initial and current economic rationales that support the forward integration decision.
Chapter 5 (Paper 4)	Bering, S. and Andersen, T.J. (2020): Forward Integration in Manufacturing: A Comparative Case Study of Governance Mechanisms	The study contrasts two forward integrated firms operating in the same industry where one is a mediocre performer and the other a consistent high performing firm. The study investigates how do the two firms govern the interdependencies between the manufacturing and distribution and what can explain the different performance outcomes of similar forward integration strategies.

Table 1.1 Overview of the Four Research Papers and Their Contents

While each of the papers can be read on a stand-alone basis, they are related from paper 1 to paper 4, initially building from theoretical understanding towards a deep empirical inquiry to form higher understanding of forward integration and inquire into the governance practices observed in the field. This means that while some elements remain part and parcel of the articles throughout the sequence of papers, different aspects of the distribution functions as well as other elements are added to enhance the understanding of the governance approaches. This makes each of the papers significantly different in their aim and approach. The progressive development of the articles is illustrated in Figure 1.6 below.

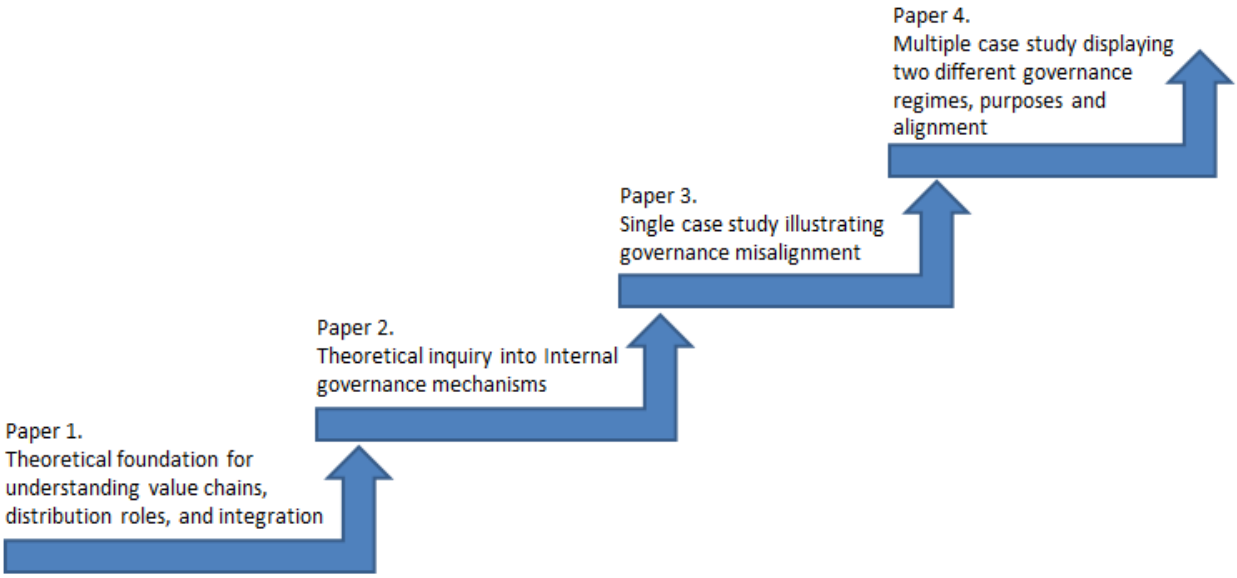


Figure 1.6 The Progression of the Four Research Papers Towards Understanding the Governance of Forward Integration.

With the progression model above in mind, paper 1 is conceptual and comprised first of a thorough analysis of value chains, industries, and economic rationales for integration. The paper seeks to understand the separation between different industries and the relationship between manufacturing, distribution, and the demands of final users. A literature review is then done within economic rationales for firm boundaries – often referred to as "Theory of the Firm." Just as firms' different inputs are made up of different elements (Figure 1), firms' distribution can

also take different shapes depending on elements like product complexity, competence, resources, and context. Building on the progressive structure between the papers, paper 2 is an in-depth study of different interdependency related factors following forward integration in substitution of markets and contracts. In the shadow of the empirical observations regarding the decision to integrate forward, this papers draws on elements from management accounting and organizational literature. This analysis establishes the basis and guidance for the case studies (Figure 1.6). Paper 3 is the main case study. Based on the findings in paper 1 and 2 this allows for a guided inductive inquiry (Levy, 2008) related to the critical governance factors. Paper 4 is a comparative case study contrasting a mediocre performing firm (main case from paper 3) in terms of profits, customer satisfaction, and loyalty with an industry high performer to inquire into governance differences as well as rationales for integration.

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CHAPTER 2:

THE RATIONALES OF FORWARD INTEGRATION: ANALYZING THE RELATIONSHIP BETWEEN MANUFACTURING AND DISTRIBUTION

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ABSTRACT

This paper analyzes the economic rationales applied to determine economic boundaries when manufacturing firms engage in the distribution and sale of own products referred to as *forward integration*. The rationales applied to analyze the effects of forward integration are complex and often generate competing or even contradictory recommendations. While analysis of backward integration formed much of the initial thinking, forward integration presents different challenges as manufacturing is exposed to the increasing costs of managing a dynamic competitive market position. Firms that can integrate forward business activities effectively can use this to create sustained economic advantage. In contrast, firms that are ineffective in forward integration fall into a *commodification trap*, where they only can compete on scale and scope economies. This can potentially lead to deteriorating competitiveness and declining performance. Hence, the potential benefits of forward integration can be reversed by increased coordination costs, unless the interdependencies between manufacturing and downstream distribution activities are properly managed. The analysis of economic rationales for forward integration generates three distribution archetypes with significantly different approaches to manage and incentivize the interdependencies between manufacturing and distribution. The archetypes are proposed as useful descriptive typologies for the empirical studies of effective forward integration.

Key words: asset specificity; corporate strategy; distribution; incentives; inter-dependency; product complexity; theory of the firm; vertical integration

INTRODUCTION

As economic activities move from traditional manufacturing towards services and integrated solutions (EU Commission, 2017; Davies, 2004; Del Prete and Rungi, 2018), traditional manufacturing firms increasingly pursue these new opportunities for growth (Davies et al., 2006; Oliva and Kallenberg, 2003; Neely et al., 2011; Wise and Baumbartner, 1999). They often do this through downstream vertical integration downstream of the value chain towards sales and distribution, also known as *forward integration*. However, this changes the way that resources and capabilities are applied in the integrated value chain, and can present fundamental challenges to the traditional business model adopted by manufacturing firms (Baines, 2015; Bigdeli et al., 2017; Kindström et al., 2013). Despite the apparent link between the tangible upstream manufactured products and the more intangible downstream value adding activities, the empirical evidence suggests that integrated manufacturing firms often struggle to turn the forward integration into profits (Benedettini et al., 2015; Gebauer et al., 2005; Harrigan, 1986; Neely, 2008; Visnjic et al., 2016). However, the literature that analyzes the downstream boundaries of integrated firms provide different and sometimes conflicting economic rationales to guide the forward integration decision (e.g., Anderson and Schmittlein, 1984; Brettel, 2010; Brickley and Dark, 1987; Kosová et al., 2013; Lafontaine and Slade, 2007; Woodruff, 2002). To clarify this conundrum, the article analyzes the complexity of interdependent value chain activities between manufacturing and downstream distribution.

The way business activities are integrated along the value chain varies across industries, but also among firms as they pursue different integration strategies. Vertical integration strategies provide opportunities to coordinate and streamline intra-firm transactions along the entire value chain using hierarchical management controls – thereby avoiding adverse effects of uncertainties from purely market-based transactions. It also provides potential differentiation benefits. The effects of these corporate strategy configurations are substantive, as demonstrated by the fact that most business transactions in the western world continue to be made between different business entities or firms within the same corporation. It is estimated that in a developed market economy like the United States, approximately 70% of all business transactions are intra-firm (McMillan, 2002). Scholars of the evolution of U.S. manufacturing (Chandler, 1977: pp. 287; Porter and Livesay, 1971: p. 166) state that forward integration started when “inadequacies of existing marketers” became clear. When these inadequacies of

downstream contractual partnerships become evident, this provides an economic incentive for upstream manufacturing firms to expand their boundaries and operational domain (Thompson, 1967). Today, downstream activities range as diverse as oil exploration into refining and distribution with integrated gasoline stations and convenience stores attached, but also car manufacturing into dealerships, services and financing, etc.

The empirical literature studying the inadequacies of existing marketers and forward integration has taken a much broader meaning since the initial perception from the late 19th century. In their seminal paper, Caves and Murphy (1976) point to the challenges of opportunism from intangible assets and resources in downstream settings when an arm's length contracting is used to govern. Indeed interdependencies have increased (Thompson, 1967) with more investments in mutually dependent assets (Williamson, 1985) between the upstream manufacturing and downstream distribution. But using forward integration as a strategy to capture downstream value can also internalize activities too much; they can cut off direct access to outside market intelligence needed to adapt firms' activities and reduce exposures to new competitive conditions (Porter, 1980). The adaptability to outside market intelligence is also determined by the firms' center of gravity (Galbraith, 1983) along its value chain. Hence, Ilinitch and Zeithaml (1995**)** found that vertically integrated firms that do not adapt the managerial center of gravity along the integrated value chain are more exposed to bankruptcy risk due to lack of business understanding of the integrated activities. In a longitudinal study in the U.S., Harrigan (1986) also found that manufacturing firms with unsuccessful forward integration can fall into a commodification trap by selling a greater proportion of outputs internally when engaging in un-differentiated products.

To understand forward integration and the differences in interdependent activities between manufacturing firms and distribution, it is important to recognize the fundamental differences compared to backward integration. These differences have implications relating to product complexity and governance – if the firm wants to justify the forward integration. First the manufacturers' intangibles like brand value or quality can only be exploited downstream, and not by upstream supply. Secondly, the location of competences and resources used for the final value offering lies upstream from the firms' final product market as Teece (1982) argues; this can potentially change the firms' competitiveness and organizational structure. Lastly with forward integration, the final revenues and profits are now realized outside of manufacturing,

which was previously the final point of consolidation. These important elements represent strategic consideration related to the products offered, markets served, and services rendered (Thompson, 1967) as well as the different competences and resources used by the firms (Nooteboom, 2004; Teece, 2007, 2010). This provides different exposures to moral hazards and incentive challenges that manufacturing firms need to consider when contemplating forward integration and governing the interdependencies along the value chain.

Inspired by the concept of "lead firms" as drivers of product and value offerings in global value chains (Gereffi et al., 2005, 2018) this paper seeks to apply similar conceptual methodology when analyzing the role of downstream distributors in relation to upstream manufacturing firms. Based on the proxies studied in the empirical literature on forward integration, we identify three distribution archetypes with different contractual dynamics and costs of integration. These archetypes have implications for the subsequent decisions to integrate forward and how to govern the downstream distribution.

The remainder of the paper is structured in four sections. The first section describes industry value chains and the division between sequential industries. The second part initially summarizes the economic rationales on firm boundaries often referred to as the "Theory of the Firm". The third section describes theoretical conflicts and highlights the influence of moral hazard theory from empirical studies. Section four focuses on the role of downstream distribution in relation to manufacturing and the interdependencies between the two. Finally, the findings from the four sections are synthesized to outline current insights and conclusions with respect to the study of forward integration governance.

1. VALUE CHAINS AND ROLE OF DISTRIBUTION

To address the topic of forward integration, it is helpful to understand the roles and functions assumed by different firms along the value chain and why industry segregation seems to appear inside the value chains.

1.0 Value chains and industry roles

Industry value chains in their basic form are defined as "the process by which technology is combined with material and labor inputs, and processed inputs are assembled, marketed and distributed" (Kogut, 1985: p.15). Various links in this process may be constituted by individual firms or by larger vertically integrated firms. Hence, the boundaries of a firm can range from a focus on specific product markets to span across multiple industries along horizontal and vertical value chains (Pindyck and Rubinfeld, 2013). The industries are constituted by firms that compete in the specific product market along the value chains, supplying similar or closely related products and services. The interactions between buyers and sellers in these product markets determine the configuration and price of different products offered in the markets (ibid). The value chains may also have industries of networked firms where leading ones can act as 'hubs' collecting inputs from various suppliers for further distribution (Gereffi, 1994, Gereffi et al., 2005, 2018). In this context two typologies can be identified as producer-driven and buyer-driven networks respectively. Producer-driven networks are typically characterized by heavy investments in production facilities with a focus on low cost operations controlled by the lead firm. We find examples of this structure in a range of industries from traditional car manufacturing to modern windmill production. Buyer-driven networks are typically more labor-intensive downstream activities where the retailers' knowledge about alternative product designs and local market requirements are important (ibid). We find examples of this in the apparel industry exemplified by the Spanish fashion retailer ZARA or the American company Proctor and Gamble in consumer goods.

An organization's value-adding activities are laid out by the technical rationality deployed in order to serve its domain. In other words, they satisfy market demands through the products and services offered to the (geographical) population served (Thompson, 1967). The technical rationality can be assessed by its instrumental and economic effectiveness. Instrumental effectiveness is determined by the degree to which the specified activities and deployed resources achieve the desired outcomes demanded in the product markets. Economic effectiveness is determined by the degree to which revenues exceed costs (ibid) and allow the firm to generate profits and survive (Alchian, 1950; Fama and Jensen, 1983). The individual firms must decide how to govern the internal value chains across different industries or output markets, determining the location of authority to deploy firm resources. They must also resolve the need for entrepreneurial responses to product complexity and market opportunities (Miles *et*

al., 1978) at different stages of outputs along the value chain. This may entail specialization and development of specific organizational structures where resources and competences are deployed in unique combinations (Mintzberg, 1979; Prahalad and Hamel, 1990). Resources can comprise both tangible and intangible assets, in addition to action-oriented competences with an ability to apply resources for specific outcomes (Nooteboom, 2004).

For firms that decide to integrate parts of the external value chain, this can be achieved by internal growth or through mergers and acquisitions (Riordan, 2008). Vertical integration can take two directions: (1) Upstream or backward integration, when the firm integrates manufacturing of inputs and intermediate products and services needed to complete the final product, and (2) downstream or forward integration, when the firm integrates subsequent business activities that further refine the final product towards a more complete offering and subsequent activities like sales, distribution and servicing of the final products. The integration of business activities can range from 'full' integration where all inputs are owned, to 'taper' where part of the inputs are sourced outside. The number of sequential stages in the value chain to be internalized can vary as can the number of different input and output sources at each stage along the value chain (Harrigan, 1986; Kogut, 1985).

This is illustrated in Figure 1 (below) showing multiple markets and industry stages along a simple value chain from raw materials to the final product market. Firm 1 is supplying a raw material that is processed through different stages to firm 3 that distributes the goods in final product markets. The manufacturing firm's (firm 2) internal value chain is comprised of tree internal stages symbolized by circles. Firm 2 might have several suppliers at the different stages and may supply the finished products to one or several distributors (firm 3) that handle the last stage of value-adding activities towards different end-users in the final product market. In other words the various product markets along the value chain bind and bridge sequential industries with different technologies to eventually reach the end-users of the final product. The X-axis symbolizes the length and stages of internal activities by each firm and also depicts the different product markets that separate industries. The Y-axis indicates the value enhancement contributed by the industry specific technologies with their different resource combinations and competences deployed along the value-chain.

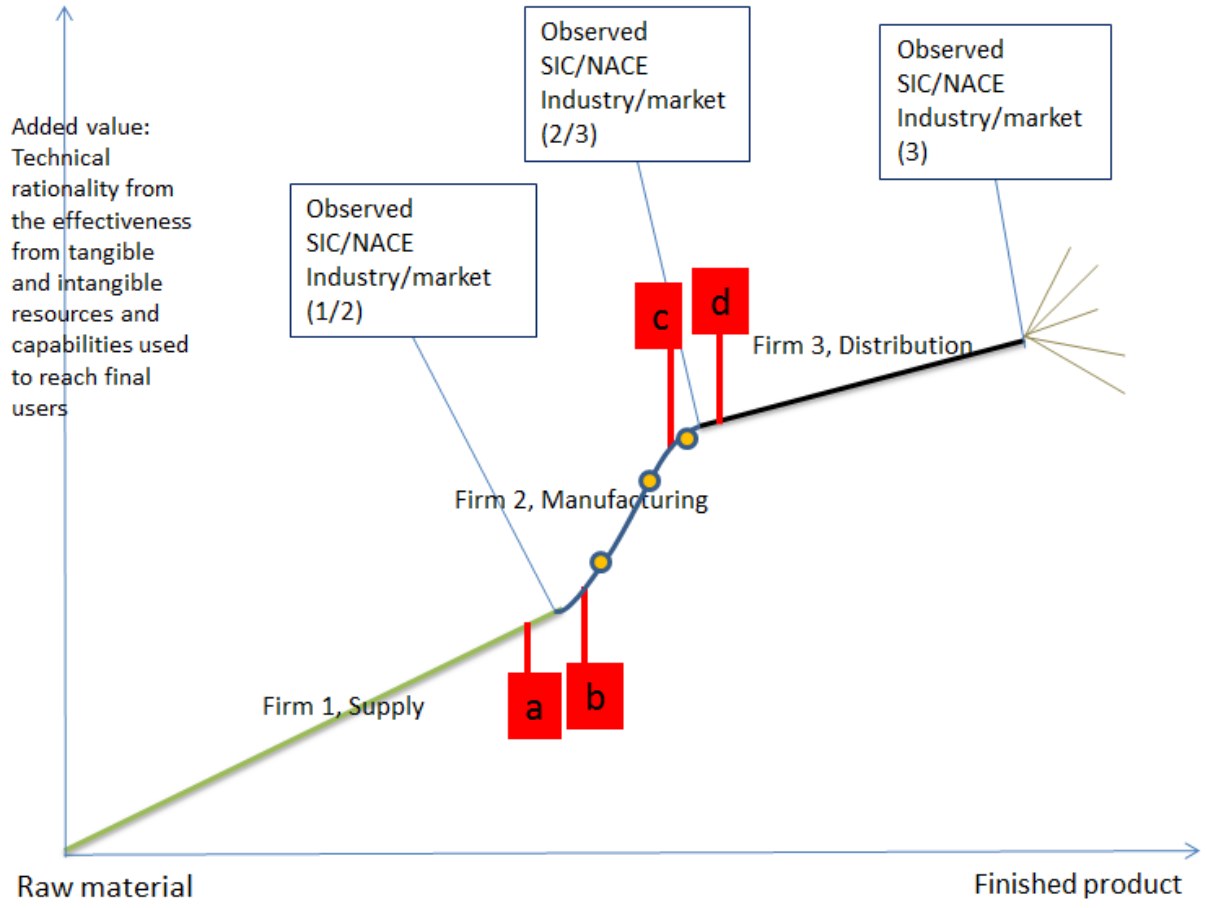

Figure 1. The value chain from raw material to finished products.

[Firms assume different roles and add complexity to the adopted organizational technology along the value chain. The SIC/NACE industries are often considered as distinct markets with normal 'break points' between them as denoted by the markets 1 to 3. The letters a-b and c-d represent variance in industry break points.]

When firms within each of the industries transform sourced inputs into outputs and compete in the adjacent product market, they possess different resources and competences, in addition to operating different organizational technologies and business models (Thompson, 1967; Teece, 2010). In a long-linked value chain, one industry activity depends on the successful completion of adjacent product inputs and its supply of value enhanced outputs. The employed technology draws on different inputs to generate finished products and achieve the stated business goals. The chosen combination of diverse inputs is partially determined from feedback about market needs related to the use of the finished product.

A long-linked organizational technology can combine with a mediating technology (ibid). This is where a mediating organization connects the output manufactured by the long-linked organization with demands from final product markets. This can comprise the sale of both semi-produced and finished products when the manufacturing firm is not dealing directly with the final users. These interactions will be handled by independent intermediary distributors for whole-selling and the like. The whole-sellers provide an interaction service introducing a business model (Teece, 2010; Baines and Lightfoot, 2014) that relies on a stock portfolio, scale and scope economies, geographical location, and local market knowledge without exerting any influence on the upstream manufactured products. The combination of long-linked and mediating technologies can also comprise more complex settings; the mediator's business model adds value based on use of own idiosyncratic resources, capabilities, and knowledge to transform the manufactured products to forms that better serve the end-users in the final product markets. This implies incorporation of a more intense mediating technology where the instrumental effectiveness in relation to final products is based on interactions and feedback between the manufacturers along with various actors in the product markets. These interactions can enable a higher degree of product differentiation, including more advanced and personalized value adding features (Baines and Lightfoot, 2013).

The different industries can often be defined by their tangible products that are easy to observe. At other times however, in the case of more specialized and differentiated product market offerings, the industry context is somewhat blurred. In the context of long-linked technologies, the output of an upstream manufacturing firm might find use for its products in many different downstream industries. For example, an upstream industry with a relative simple commodity-like product, such as petroleum, provides input to many different industries like gasoline, plastics, and tires. However, it is hard to imagine that an upstream petroleum producer integrates all aspects of the downstream industries where the petroleum finds use. Otherwise the integrated firms would be much larger than we normally observe and closely resemble planned economies. In other instances the deployed organizational instrumentality resembles that of the adjacent industry where the managerial and operational capabilities (Thompson, 1967) employed to execute them are similar to the adjacent firm. This can be illustrated by the sigmoid (S-curve) function along the value chain induced by manufacturing firm 2 between the adjacent industries 1 and 3 (Figure 1). The significant increase in value-creation from point 'b' to 'c' depicts an instrumentality that is distinct from firm 1 and 3 in the supplying and distribution

industries. In contrast, the almost identical slope between point ‘a’ to ‘b’, and ‘c’ to ‘d’, presents similar instrumentality between firm 1 and 2 and firm 2 and 3 respectively with comparable technologies used in the adjacent industry. This instrumental similarity can make this marginal activity subject to easier shifts along the value chain, easier to integrate, and coordinate.

When the instrumentality of manufacturing and the implied managerial resources and capabilities deployed are similar or familiar to the adjacent industry, integration becomes simpler and more predictable (e.g., Barney 1999; Demsetz, 1988; Connor and Prahalad, 1996). Conversely, when the instrumentality applied in the manufacturing is very distinct from the adjacent downstream industry, the managerial challenge of forward integration becomes more demanding. Differences between deployed instrumental activities, operational capabilities, managerial competences, and organizational features similar coordination mechanisms, control systems, incentive structures, etc. complicate the integration and governance of different business models (Argyres, 1996; Demsetz, 1988). This presents a number of challenges to organizations that contemplate forward integration. They must consider the diversity of business activities and which stages along the value chain the integration should stretch before reaching the final product markets. Reverting to the example of a petroleum company, it does not possess the all the necessary competences and capabilities to integrate with the many different industries that use their product without delegation of authority to lever the use of specific resources, capabilities, and knowledge (Coase, 1937; Chandler, 1977; Demsetz, 1988; Jensen and Meckling, 1990).

The discussion of industry value chains often assumes that product markets are characterized by spot transactions. This, unfortunately, leaves out considerations about the distribution of responsibility, authority, and contractual arrangements to govern the interdependencies between firms. When firms transact in spot markets they are individually responsible for solving their entrepreneurial challenge and instrumental effectiveness and remain the sole residual claimant to the consolidated revenues and profits. This means that each firm specialize its resources, competences, and capabilities related to the product complexity within its own industry and related product market to ensure its own economic returns. But, trading partners in adjacent industries may develop interdependencies over time where investments are made to increase efficiencies in the relationship to the adjacent trading partner.

They begin an effective and fundamental transformation by gearing their investments to enhance transactions with specific trading partners (Williamson, 1985). This can be the case when one firm offers the other exclusive rights to the sale of a product, or commits to a certain way of doing business in return for specialized investments (Klein, 1995; Lafontaine and Raynaud, 2000). In these situations, the specialized asset specific investments (Klein et al., 1978; Williamson, 1979) are sources to future jointly generated profits while also increasing the costs of leaving the trading relationship.

Based on this general discussion of value chains, we will now investigate the economic rationales developed to assess the viability of forward integration among manufacturing firms into downstream distribution and value-adding activities.

2. THE ECONOMICS OF VERTICAL INTEGRATION

Vertical integration is often discussed as simple make or buy decisions, i.e., whether to incorporate production activities inside the company or buy the input products in the market, which primarily implies backwards integration. However, a review of the academic literature on the vertical boundaries of a firm presents a much larger question with diverse economic perspectives offered to resolve this rather complex issue. Vertical integration is referred to as "a long-linked technology" that "involves serial interdependencies in the sense that act Z only can be performed upon the successful completion of [preceding] act Y, which in turn rest on X, and so on." (Thompson, 1967: p. 15). Hence, it refers to a series of highly interdependent production processes. Porter (1980: p. 300) depicts vertical integration as "technologically distinct production, distribution, selling, and/or other economic processes within the confines of a single firm" thus implying that each of the business activities may rely on unique technologies. Riordan (2008: p. 4) similarly refers to the organization of "successive production processes within a single firm, a firm being an entity that produces goods and services". These perspectives refer to sequential operational activities to be managed within the confines of a single firm or organization. This reflects coordination of interrelated business transactions through hierarchy (e.g., Arrow, 1969, 1975; Coase, 1937, 1988; Simon, 1951; Williamson, 1975, 1985, 1991) as the firm has legally assigned property rights to the underlying assets and can determine how resources are used (Alchian, 1989; Grossman and Hart, 1986).

2.0 Rationales for firm boundaries.

The academic literature has produced an impressive array of theoretical rationales that consider cost and revenue tradeoffs between transacting business in the market or through internal hierarchy and managerial intervention, as economic justification for the size of the firm. This section provides a brief overview of these firm boundary theories, which by the nature of the topic, must be general without any pretense to do complete justice to the vast number of contributions. Following Winter (1991), it seems helpful to distinguish between theories that focus on costs related to contractual relations carried out as trades across related markets and theories that focus on the considerations of an integrated firm and its ability to improve internal efficiency.

2.1 Transaction costs

It is widely recognized that markets can be imperfect due to economic externalities and incremental costs from transactions across markets (e.g., Alchian and Demsetz. 1972; Arrow, 1969; Coase, 1937; Debreu, 1959; Knight, 1921; Simon, 1951; Williamson, 1971). These reasons emphasize the impact of bounded rationality, risk, and uncertainty in recognition of potential effects on *moral hazard*, risk taking, and opportunism that can impose costs on the economic system. If markets were as efficient as often proclaimed, then there would be no economic reason to integrate (Williamson, 1971). Hence, integration can be a way to eliminate market imperfections, asymmetric information between buyers and sellers, and opportunistic behaviors among sequentially linked agents. The integrated firm can compete on different organizational structures that economize on costs of transactions as support for strategies to improve competitiveness. This is of fundamental importance because economizing is a more sustainable position than market power and therefore should be a primary strategic focus (Williamson 1991).

The recognition of inefficient markets and transaction costs has developed into two main streams of research. The first relates to incomplete contracts and the second to incentive costs of segregated asset ownership.

2.1.1 Transaction cost economics

Firms that engage in trading relationships with repeated interactions will over time make specialized asset investments to enhance the specific relationships in ways that either increase cost efficiency or introduce revenue enhancing features. This fundamental transformation will develop interdependencies between trading partners caused by their mutual asset specific investments. Williamson (1985) argues that this *asset specificity* of investments can take both tangible (e.g., sites and physical asset) and intangible forms (e.g., human resources or a brand name).When the asset specific investments have higher value inside the trading relationship than outside, they are said to earn 'quasi rents' (Klein, Crawford and Alchian, 1978). It is the quasi rents earned from asset specificity that can become vulnerable to appropriation by opportunistic partners (Klein, Crawford and Alchian, 1978; Williamson, 1979). Contrary, if an investment can leave its current use without any additional costs, it is immune to opportunism.

Uncertain business conditions create a need for un-programed adaptation. However, since individual decision-makers are exposed to imperfect information, time pressures, cognitive limitations, and bounded rationality (Simon, 1951), it is difficult to create legal contracts that can fully safeguard against opportunistic exploitation. Hence, it is possible for opportunistic trading partners to hold-up and appropriate quasi rents from the unique asset investments made by adjacent firms. This concern has become known in economics as post contractual opportunism and is central to the theory of incomplete contracts in *transaction cost economics* (Williamson, 1975; 1979; 1985). Although opportunism can appropriate quasi rent gradually over time, Leiblein and Miller (2003) argue that hold-up situations typically appear in connection with contractual renegotiations.

This hold-up phenomenon provides an economic rationale for the exposed firm to acquire, integrate, and thereby control an opportunistic trading partner. A classic example of hold-up and appropriation of quasi rents from tangible asset specificity is General Motors' backward integration through the acquisition of Fisher-Body (Klein, Crawford and Alchian, 1978; Klein, 2007). Another example is Joskow's (1985) study of contracts between coal burning electricity producers and supplying coal mines. In the Klein (2007) paper, Fisher-Body refused to relocate their plant next to General Motors and incurred transportation costs that hampered efficiency and eventually motivated General Motors to engage in backward integration to acquire the company. In the Joskow study, the electricity plants had been located in the proximity of the

mines to economize on transportation where joint ownership or long-term contracting were the preferred solutions to avoid hold-ups. Studies relating to intangible asset specificity and forward integration (Anderson and Schmittlein, 1984; Anderson , 1985) find that when downstream activities require investments in asset specific non-selling activities, or costly upgrading of resources, common ownership of assets are more likely.

Two important differences between these examples seem noteworthy. If all investment costs are sunk and the specialized asset generates the full scale of quasi rents, as in the case of a tangible site-specific investment, the quasi rents can be appropriated by an opportunistic partner without affecting the future operations of the specific asset. While appropriation of quasi rents from site specificity is unfortunate, it can only be done once, and therefore does not distort the value potential of this investment, per se. In the case of ongoing investments in intangible asset specificity that holds quasi rent potential for both parties, such education of resources or enhancing brand value, attempts to appropriate the created quasi rents can lead to closure of future related investments. The reason for this is that while the initial ongoing investment is sunk and can be appropriated, the held-up firm can stop future specific investments, which will affect the opportunistic partner's future profits as well. Therefore opportunism related to investments in intangible asset specificity has broader profitability implications – also being more complex to describe contractually.

2.1.2 Incentive alignments and control

The recognition that transactions across markets are associated with incremental costs also developed in other directions. The contracts established between firms are not seen as the source of opportunistic behavior, but rather as honest differences in economic incentives between parties holding segregated asset ownership.

While an outside contractor acts independently in own its interest through the contractual agreement, an internal employee agreement differs by the nature of the contract (e.g., Coase, 1937; Simon, 1951; Williamson, 1975). When unforeseen contingencies occur, an internal employment contract makes it easier to adapt compared to a contract with an independent entrepreneur (ibid). The rationale for this is that a contract with an outside contractor cannot describe all possible future events, and therefore adaptive actions require renegotiation of the

contract. An employment contract transfers some authority to the owner or manager. In other words, when the employee's incentive is muted from lack of asset ownership, it creates an "area of acceptance" to be directed by the owner of the assets (Simon, 1951: p. 294). This means that an owner, by providing higher job security and weaker internal incentives, acquires increased flexibility from employees, compared to outside ownership. It increases the flexibility of the owner with possibilities to prioritize or postpone decisions. The advantage of postponing decisions until more information has emerged makes it possible to adapt more effectively without having to renegotiate existing contractual relationships.

This in turn leaves the owner with the task of knowing, directing and coordinating all the work, which eventually may create information overload that makes internal authority inefficient thus defining the boundary of the economic firm (Coase, 1937). If activities within the firm have a high degree of similarity and standard features, it is possible for the owner to impose a wider span of control before there is a need to use outside market knowledge. In contrast, if the activities to be integrated by the firm are dissimilar enough to require vastly different managerial competences, delegation of power is needed to circumvent the increasing information overload (Jensen and Meckling, 1990).

Providing secure employment can cause employees to provide less that optimal effort because the losses of suboptimal effort are externalized to the owners. If the agents do what their job requirements entail, there will be no loss of value. Information is asymmetric and the principal (owner) cannot observe all the actions of the agent (employee), which makes it difficult to compensate the agent based on simple output as uncertainty blurs the relationship between effort and output. This provides a basis for moral hazards.

The firm is seen as a nexus of contracts where the authority of asset ownership is accompanied by the right to hire and fire employees that mitigate agency costs and circumvent moral hazards (Alchian and Demsetz, 1972; Jensen and Meckling, 1976). Salanié (2005) explains moral hazards as actions that can be taken by an agent to affect his or her utility, and that of the principal, where the output is an imperfect signal of the actions taken by the agent. If the agent uses this situation to his or her advantage at the expense of the principal, it will impose moral hazard costs on the firm. Jensen and Meckling (1976) highlight these costs associated with differential interests of principals and agents as lost value potential from foregone commitments of resources that make effective monitoring and proper incentives necessary

(ibid). From this perspective, firms are structured to minimize the implied agency costs where some incentives are more effective under principal ownership because they create and share a common interest in increasing the value of the assets (Gibbons, 2005).

Later work has focused on the prioritization of work effort considering complementary issues of multitasking, adverse selection, weak incentives, internal controls, and monitoring (e.g., Holmström and Milgrom, 1991, 1994). Gibbons (1998) also considers the role of objective and subjective performance measures and individual skills acquisition as important incentives. Firms can therefore be seen as large reservoirs of intangible resources, like people or agents, where promotions are incentives that influence the perceived value or utility gained by these agents (Lazaer and Gibbs, 2014). These soft incentive systems are often seen to complement inaccurate output measures, but they remain subject to agent manipulation signaling effort and impact that can be difficult to verify.

2.1.3 Property rights and incentives

Property rights theory (Grossman and Hart, 1986; Hart and Moore, 1990) can be considered a hybrid between transaction opportunities and incentives. Like transaction cost economics, it recognizes the importance of making asset specific investments capable of creating quasi rents, but also emphasizes that these investments are essentially non-contractible, which trading partners are cognizant about. This makes it difficult to account for the investment costs and the generated quasi rents, thereby exposing the non-contractible asset specific investments to opportunistic appropriation. Therefore these asset specific investments will not be made unless property rights secure the status as residual claimants to the generated quasi rents. Property rights theory perceives costs as distorted incentives for asset specific investment capable of generating quasi rents that will not be made, due to ex ante recognition of the non-contractible nature and lacking contractual protection. It therefore matters who has property rights to the specific investments so the proper residual claimants can be rewarded.

Firm 3 (Figure 1), a downstream distribution company could exemplify non-contractible investments as the owner’s entrepreneurial effort to develop a service oriented firm commit intangible resources in the development of a joint brand. When these non-contractible investments face the risk of ex-post rent appropriation from firm 2 (the manufacturer), firm 3

will be inclined to refrain from making these important commitments. If the investments are considered very important by firm 2, firm 3 should be integrated into firm 2 to ensure that these investments are being made. That is, firm 2 integrates forward to avoid distorted incentives. Yet, the integration of firm 3 also removes the incentives of the integrated firm 3 to make other non-contractible investments. This is because firm 2 has acquired the residual rights from firm 3's non-contractible effort. When firm 2 formally holds the property rights over firm 3's tangible assets, it can determine how to use them and who is allowed to use them, thereby appropriating rents from firm 3's non-contractible efforts. This problem of distorted incentives is also addressed by Holmström and Tirole (1991) in their study of transfer-pricing and internal profit allocation. However, it is also argued that if both firms have important non-contractible investments, ownership should remain separate to incentivize the principals (owners, managers) to undertake the required intangible investments (Grossman and Hart, 1986; Gibbons, 2005; Woodruff, 2002). Property rights theory therefore stresses the transfer of ownership and control over assets as a benefit but also as a cost by formally neutralizing environmental effects through integration, and instead directing attention to managing and controlling the costs of integration.

In a critique of Williamson (1985), Alchian and Woodward (1988) argue that it is important to distinguish between two different sources to opportunism; hold-ups and moral hazards. Asset specific investments can be exposed to post contractual opportunism in the form of a hold-up, but these costs differ from the costs incurred from moral hazard. The owner of a specific asset may realize that profits are shrinking but will keep running the specialized asset until the quasi rents, compared to its second best use, is zero. In the case of a hold-up from market transactions, the appropriated quasi rents will be visible with the opportunistic partner as increased profits. But in the case of moral hazards, it is more difficult to detect if the source of opportunism is related to the trading partner's lack of efficiency. The realization of incurred costs from moral hazards is also related to the costs of detection; in other words, the ability to monitor and accurately meter activities and related outcomes. In the case of moral hazards, the appropriated quasi rents will appear as increased costs or lower revenue inside the trading partner.

Alchian and Woodward (1988) argue that the degree to which an asset or investment is exposed to moral hazard costs depends on what they call 'plasticity,' indicating the range of discretionary and legitimate uses of the asset. If use of a specialized physical asset is easy to observe and has low monitoring costs – while it might be exposed to hold-up – it will almost be

immune to moral hazard costs. In contrast, if a specialized asset is plastic and difficult to meter, like many services and behavioral efforts, it is vulnerable to both moral hazards and hold-ups (ibid). To resolve the issues of opportunistic hold-ups and moral hazard costs, the integrated structure should reduce the plasticity of specific assets and provide more accurate metering of agent efforts.

These aspects capture the many nuances in the theoretical rationales applied to the integration decision, but they all consider the effects of contractual differences as the motivation to integrate transactions and business activities within the same firm. While transaction cost, property rights, monitoring, control, and adaptation perspectives consider the costs associated with segregated ownership and divergent incentives between principals and agents, the following section looks at different theories related to production efficiency.

2.2 The efficiency of integration

Turning the focus away from costs related to market transactions and towards the firm as the creator of a profit maximizing production function, this analyses also adopts two fundamentally different perspectives. One perspective focuses on the firm as a profit maximizing entity that generates its revenue from its market position based on economies of scale and scope and the power to restrict competition. Another perspective embraces the internal heterogeneity of the integrated firm and considers the technological transformation of resources and capabilities that affect revenues and production costs.

2.2.1 Industrial organization

The theories that address marginal revenue and production cost like classic micro-economics and *industrial organization* have their roots in analyses of price-quantity mechanisms. Conventional models assume an equal production technology across firms that emphasize economies of scale and scope as underlying mechanisms to achieve competitive advantages (e.g., Bain, 1968). Industrial organization theory advocates that economies derived from the physical and/or technical integration of the production processes within a single firm. Bain (1968) argues for physical and technical conditions related to cost-savings are key rationales for

integration. In the absence of cost-savings, the logic for vertical integration is unclear. The relative attractiveness of the industry also influences the decisions to integrate, control, and concentrate business activities. In some market structures it may be possible (and beneficial) for firms to create powerful market positions that restrict output and raise prices. These types of integration considerations with the purpose of restricting competition and enhance the profitability of the firm are also prevalent in Michael Porter's (1979) familiar five forces model.

The Chicago school of Economics in the 1960s and 70s expanded industrial organization with discussions of single monopoly profits and elimination of mark-ups (Riordan, 2008). The latter is linked to the issue of *double marginalization* (Eccles, 1985; Pincyck and Rubinfeldt, 2009; Riordan, 2008) where separate ownership between two sequential monopolistic profit maximizing trading partners will lead to an in-optimal price-quantity position. Two firms or business entities that operate with disjointed price-quantity targets will not optimize the aggregated profits, as they fail to align the price of the intermediate product. Vertical integration supposedly resolves this problem using authority to set the price of the intermediate product, thereby determining the allocation of profits between entities operating within the firm boundaries. However, if the downstream market only offers limited transparency, this asymmetric information makes it difficult to set prices of the intermediate goods to achieve optimal profits for the joint upstream and downstream activities. At the same time, the existence of asymmetric information provides an opportunity for the distributors to act opportunistically and appropriate profits from the manufacturer by claiming specific market conditions for the final product. Resolving the double marginalization problem requires that the integrated firm creates full transparency to eliminate the information asymmetry thereby allowing the merged firm to establish price-quantity combinations that optimize the profitability of the joint operations (Riordan, 1990).

2.2.2 Evolutionary economics

Another school of thought sees the creation of integrated firms from the perspective of evolutionary economics (Winter, 1991) where value creation derives from unique heterogeneous resources as a source for sustained competitive advantage (Barney, 1991, 1999; Peteraf, 1993). These theoretical rationales focus on idiosyncratic endowments of resources, procedural

competences, and knowledge across firms (e.g., Barney, 1991, 1999; Connor, 1991; Demsetz, 1988; Kogut and Zander, 1992; Penrose, 1959; Wernerfelt, 1984; Nelson and Winter, 1982; Teece et al, 1997). The economic advantage does not derive from minimized transaction costs or economies of scale and scope, but rather from the valuable features of unique underlying resources, capabilities, and competences (Nooteboom, 2004). The implied resource bundles can be comprised by tacit knowledge-based processes that evolve over time and are hard to emulate. This implies that idiosyncratic resources are difficult to acquire in strategic factor markets without fully paying for their rent creating capacity to ultimately eliminate the excess return of rents (Barney, 1986; Dierickx and Cool; 1989).

The possession of such resources, and the capability to develop and combine them with purpose and utility, can form the basis for superior advantages of internal transaction processing compared to market exchanges and thus constitutes an added rationale for integration. Firms that possess strong competences and resources can improve marginal returns through integration that will reduce production costs and enhance innovative product offers to increase customer utility and the willingness to pay higher prices (Hoopes, Madsen and Walker, 2003). Demsetz (1988) argues that the ability to give proper strategic direction comes from supervision through knowledgeable managers, although this also comes with a cost. Therefore, the point where the cost of producing a final product across the value chain is lower than the cost of acquiring needed knowledge and management supervision will determine the boundary of the firm (ibid). Connor and Prahalad (1995) extend this view and argue that when an independent party has superior knowledge within its area of operation it might be advantageous to integrate it. This is because the knowledge processing party or firm might not be able see the potential advantage that an integrated firm can achieve, since its knowledge is confined to a limited set of production processes and market contexts.

3. THEORETICAL DILEMMAS AND EMPIRICS

Despite the theoretical progress in explaining firm boundaries, integration is not always a straightforward issue; the strategy literature often fails to recognize competing rationales offered by the different theoretical contributions. Any person that has worked in a large institution will recognize that conflicts and potential hold-up situations often arise between different

departments and individuals driven by different incentives and political agendas. When firms address the challenges of integration, it accentuates Gibbons' (2005: p. 206) dictum that "to stop one hold-up problem typically creates another hold-up problem". For example, say the integration decision adopts one set of transaction cost rationales to assess the opportunism of contractual arrangements. Then the integration decision should also consider potential implications offered by other theoretical approaches. While some of these theories are complementary, others conflict and can lead to cost increases. In particular for firms with multiple product lines, the exposure to changing environmental conditions can make it difficult to determine the viability of the integration advantage when one integration rationale is more pertinent than another. These considerations apply to analyses of industry value-chains as well as vertically integrated corporate activities. As Williamson (1973: p. 316) observes, "substantially the same factors that are ultimately responsible for market failure also explain failures of internal organization". Managerial decision-makers are often confronted with these very tradeoffs and have to find ways to deal with them.

3.0 Conflicts in integration theory

When trade and interaction no longer represent simple spot markets, the competition and conflict between different theoretical rationales and perspectives become visible in the distinction between first, second, and third-order economizing (Williamson, 1998). 1st order economizing focuses on the institutional environment of government policies, laws, administrative structures, the efficiency of the legal system, and property rights that dictate the rules of the game when organizing for economic productivity. 2nd order economizing deals with inter-firm governance approaches and how to operate under prevailing market structures and trading relations. The governance approach and its contractual set-up are important to minimize transaction costs and through this, optimize production efficiencies. 3rd order economizing is focused on management concerns where important managerial decisions consider analyses of marginal performance effects and internal efficiencies. Usually 1st order economizing is considered as being outside the direct influence of firms. The reason being that this level has been shaped through long-term non deliberate actions like informal traditions, norms, religion, institutions, and even revolutions that have influenced regional and national legislation, legal systems and political governance approaches. In contrast, 2nd and 3rd order economizing are left

to independent actors, like firms, to decide on. This means that firm owners must decide on issues like the efficiency of the legal system for solving disputes, but also on what ownership structure provides the most efficient coordination and incentives.

As the discussion of vertical boundaries illustrates, different theories cater to solve different economic challenges of operating either within 2nd order economizing, that is market trade or integration, or 3rd order economizing, that is, creating the optimal conditions for marginal performance and internal efficiencies. While integration in some instances can solve costs related to transactions across markets, we cannot assume that new costs do not remain "if the factors which makes haggling very inefficient under non-integration are correlated with those that make abuse of fiat very inefficient under integration" (Gibbons, 2010: p. 277). In other words, the decision to integrate cannot assume that possibilities for internal opportunism will disappear. Therefore, the ex post integrated firm is not just a 'black box' where internal opportunism can conveniently be assumed away. When firms expand and integrate they create (different) internal structures to make efficient use of resources and competences (Jensen and Meckling, 1990). They can also create incentives to allocate resources effectively (Brickley et al., 2015). This opens for a potential dilemma as integration may distort the incentives provided by segregated asset ownership, where owners were residual claimants to their own non-contractible efforts (Grossman and Hart, 1986; Tirole and Holmström, 1991).

If a firm makes an integration decision based on transaction cost economics, the primary concern is on 2nd order economizing, e.g., trying to minimize the costs of transacting across markets. However, after integration management must deal with 3rd order economizing issues of opportunism and moral hazard by establishing contractual arrangements, monitoring systems, and aligned incentives to exploit the economic opportunities offered by the integration. Adopting one particular theoretical rationale to support these diverse decisions can possibly lead to contravening effects that dilute the economic advantages of integration. If a manufacturer has asset specific investments, they are subject to opportunistic appropriation of quasi rents by distribution based on transaction cost economic rationales. At the same time we find situations where distribution has important investment incentives that are non-contractible with manufacturing argued from a property rights perspective (Grossman and Hart, 1986; Whinston, 2003; Woodruff, 2002). This can be resolved by segregating the ownership of assets. The segregation of ownership is recommended because the non-contractible investments will be

executed by the residual claimants to the generated quasi rents. This sets the course for potential conflicts between transaction cost and property rights theory. The reason for this is that transaction cost economics perceive contractible asset specific investments as vulnerable to opportunistic hold-ups arguing in favor of forward integration. Property rights theory on the other hand addresses the importance of non-contractible investments arguing in favor of segregated ownership. That is, adopting different economic rationales lead to contradictory and directly opposing recommendations. Hence, we often see firms with multiple divisions where the integration decision is unable to distinguish between the conflicts arising from contractible and non-contractible investments (e.g., Whinston, 2003).

The integration rationales should not only analyze ex ante arguments, but also consider the effects of ex post coordination and incentive structures particularly since they may create polarized perspectives. This dilemma was recognized by Holmström and Milgrom (1994) as they emphasize the need to align different internal incentive systems to avoid competing behaviors. Hence, the internal incentives from asset ownership, authority to direct work and weak incentives to avoid agents' adverse selection should ideally all be complementary. This is because agents in distribution that are incentivized by segregated asset ownership are unlikely to care for the future value of the manufacturing assets, which may lead to undesirable and inefficient decisions. Therefore, each of the incentive elements should react in concert to the influences of exogenous conditions. If the effects from market transactions, that guide distribution's prioritization of effort, cannot be observed because assets are plastic and thus subject to moral hazards, then manufacturing should integrate forward. This assumes that integration improves manufacturing's ability to monitor the output of distribution efforts. But at the same time, integration should cause distribution to care about the manufacturing assets, thereby improving Pareto optimality.

While this has intuitive appeal, it also presents questions that need answers. First, we cannot assume that just because distribution efforts are not observable, they are not subject to moral hazard. Prioritization of efforts that to the manufacturer may look like moral hazard costs can easily reflect distribution's use of idiosyncratic market knowledge used for future profits. This constitutes investment in intangible assets, exemplified by customer satisfaction and loyalty. Second, well-meant yet weak incentives aimed at preserving the value of the manufacturing assets should not remove the incentives for distribution to prioritize customer satisfaction and

loyalty. If a manufacturing firm integrates distribution that uses idiosyncratic resources to create value, then the internal structures and incentive systems should preserve these incentives. Alternatively, the integrated company should align the incentives linked to different assets and resources so the marginal profits from integration and alignment are higher than is the case with segregated ownership. If integration does not resolve this and we observe segregated ownership of assets, then there will be inevitable conflicting interests between the two long-linked interdependent activities, e.g., manufacturing and distribution, which must be governed contractually.

Holmström and Milgrom (1994) were inspired by Anderson and Schmittlein's (1984) study of forward integration. This study considered the high cost of monitoring performance from a moral hazard perspective and the effects of employee education and their willingness to perform non-selling activities from an asset specificity investment perspective. However, Holmström and Milgrom (1994) recognize the failure to explain similar examples of high monitoring cost with segregated ownership of assets. Adopting a property rights theory perspective on the non-contractibility of distribution's non-selling (manufacturing important) activities will also lead to a forward integration decision. The reason is straight forward. If non-selling activities are considered important and present an investment incentive to manufacturing but not to distribution, the distributor will not undertake this investment due to lack of contractual protection of the future value. More precisely, distribution will only undertake the non-contractible investments if they are important and distribution remains the residual claimant to future value from ownership rights. Conversely, if investments in non-selling activities are important to manufacturing, forward integration will give them property rights to direct the distribution so they undertake these investments.

These polarized explanations make it relevant to ask if there are different and competing dimensions affecting the firms' portfolio of activities and how this affects forward integration. Does the activity that the distribution undertakes to ensure that the manufactured product stays competitive in the final product markets reflect a pure long-linked technology (Thompson, 1967)? Or does it (also) imply important elements of intensive adaptation to customer specific demands? Using the Holmström and Milgrom (1994) conception of the firm as an incentive system this would imply that for integration to be economical there would not be any 'vertical' competing dimensions affecting the activities of agents along the value chain.

We now turn to the empirical evidence about the upstream and downstream activities undertaken in relation to forward integration.

3.1 Empirical studies

The integration rationales and associated cost considerations depend on whether the integration is upstream or downstream. The concern for primary costs from transacting across product markets along the industry value-chain, along with the ability to mitigate the secondary (unintended) costs from integration, look different. This depends on whether the focus is linked to supply (backward integration) or distribution (forward integration). Anderson and Schmittlein (1984) and Anderson (1985) set out to test transaction costs from an asset specificity investment perspective in forward integration, but surprisingly found a stronger relationship to incentives and moral hazard theory. Later empirical studies have confirmed this relationship, suggesting that the costs associated with operating the economic system pans out in different ways. Hence, there is strong evidence for a transaction cost economics perspective adopted to address opportunism from asset specific investments in backward integration, whereas forward integration seems to rely more on arguments from a moral hazard perspective (Lafontaine and Slade, 2007).

Does this imply that we do not observe asset specific investment in downstream trading relations between manufacturing and distribution, and that related quasi rents are less exposed to a hold-up in downstream market settings? Not at all, to the contrary. As appears from the prior discussion, long-linked firms with interdependent activities rely on many asset specific elements associated with market and customer specific knowledge. However, the way human effort interacts with the use of more tangible manufacturing assets is special and must be managed. Empirical data (Lafontaine and Slade, 2007) seems to suggest that the way opportunism plays out in certain downstream settings ascribe more influence to a moral hazard perspective from the plasticity of asset specific investments. With low monitoring cost of agents, asset specific investments are immune to hold-up. But as the plasticity of asset specific investments increases, they are vulnerable to both hold-up and moral hazard issues. This leaves us in a situation where intangible resources are both the source of value creation, as well as the source of costs in the shape of moral hazards.

Lafontaine and Slade (2007) made an excellent review of studies that assesses firm boundaries and integration of downstream business activities. One of the challenges related to integration is the dilemma of assigning consistent incentives and controls. Firms that offer a fixed salary payment scheme buy acceptance to centralized decision-making among risk adverse employees (e.g., Coase, 1937; Simon, 1951; Williamson, 1975). At the same time they also lower the incentive to use their own personal effort, whether observable or not (Alchian and Demsetz, 1972; Holmström, 1982, Jensen and Meckling, 1975; Fama, 1980). From this vantage point, the decision to integrate forward uncovers several interesting relationships that make the balance between moral hazard issues and incentives to use own effort very tight. Lafontaine and Slade's (2007) review of the empirical literature presents seven relevant insights (Table 1).

Table 1. Insights from empirical studies on forward integration

Insight/general finding	Link to forward integration	Representative authors
Forward integration is expected to reduce downstream risk (3.1.1)	Negative	Lafontaine (1992); Lafontaine and Bhattacharyya (1995) Woodruff (2002);
Forward integration has a negative effect on downstream effort (3.1.2)	Negative	Lafontaine (1992); Scott (1995); Nickerson and Silverman (2003); Lafontaine and Shaw (2005)
Forward integration rewards upstream effort (3.1.3)	Positive	Lafontaine (1993); Scott (1995); Nickerson and Silverman (2003); Lafontaine and Shaw (2005)
Forward integration is enhanced by the size of downstream assets (3.1.4)	Positive	Brickley and Dark, 1987; Lafontaine; 1992; Thompson, 1994; Brickley, 1999; Lafontaine and Shaw, 2005
Forward integration is prompted when it provides access to accurate monitoring of input-output measures (3.1.5.a)	Positive	Anderson and Schmittlein (1984); Anderson (1985); John and Weitz (1988)
Forward integration is dissuaded when it does not provide accurate monitoring of intangible inputs like behavior and entrepreneurial effort (3.1.5.b)	Negative	Brickley and Dark (1987); Baker and Hubbard (2004); Minkler (1990); Norton (1988); Woodruff (2004)
Forward integration can have both positive and negative outcome from spillover between different branches and effects from repeated business (3.1.6)	Ambiguous	Brickley and Dark (1987); Brickley (1999); Minkler (1990)
Forward integration can have both positive and negative outcome when facing downstream multiple tasks (3.1.7)	Ambiguous	Baker and Hubbard (2004); Shepard (1993); Slade (1996); Nickerson and Silverman (2003)

3.1.1. Risk is negatively correlated to forward integration: From a principal agency perspective, we should observe increasing forward integration as risk from various downstream market factors increase. This should be the case when marginal returns from manufacturing and distribution tasks co-vary, so all the agent exposures increase in parallel. However, when the mitigation of downstream distribution risks relies on specialized knowledge and effort in distribution, the manufacturing principal prefers not to integrate activities (Lafontaine and Slade, 2007). In this situation, incentives from segregated asset ownership will allocate both reward and punishment to the downstream distribution agents as they use their specialized resources and capabilities to reduce risk (Martin, 1988; Lafontaine, 1992; Lafontaine and Bhattacharyya, 1995; Woodruff, 2002).

3.1.2 Importance of downstream effort is negatively correlated to forward integration: Asset ownership often provides stronger incentives to agent efforts that are hard measure and monitor. When the distribution's tasks require more specific entrepreneurial effort, they should be supported by incentives related to asset ownership. When the downstream agents' efforts are important to success it is associated with less integration, which is supported by empirical studies (e.g., Brickley et al., 2015; Caves and Murphy, 1976; Shepard, 1993; Slade, 1996; Woodruff, 2002).

3.1.3 Upstream effort is positively correlated to forward integration: Moral hazard theory argues that a balanced division of profit is important to incentivize agents, both in manufacturing and distribution. However, when the effort of the upstream manufacturing, takes increasing importance for value creation and is difficult to measure, there must be strong incentives for the manufacturer to perform. There is strong empirical support for a positive relationship between the need to provide incentives for upstream effort and integration of downstream activities (e.g., Lafontaine, 1993; Scott, 1995; Nickerson and Silverman, 2003; Lafontaine and Shaw, 2005).

3.1.4 Size of downstream outlet is positively correlated to forward integration: When downstream exposure to market risk remains constant, but downstream distribution activities are sizeable and represent higher investments in tangible assets, this increases the ratio of capital investments to the constant exposure of risk. This increase exposes the distribution to more risk. So, downstream capital investment and the associated risk are positively related to forward integration as an agency model predicts (e.g., Brickley, 1999; Brickley and Dark, 1987; Jensen

and Meckling, 1976; Lafontaine; 1992; Lafontiane and Shaw, 2005; Thompson, 1994). It should be noted that this risk differs from the risk correlated to downstream specific knowledge and resources discussed in 3.1.1 above.

3.1.5 Costly monitoring of agents - two different explanations: Difficulty of providing accurate measures of downstream agents' effort will increase monitoring costs. This form a higher exposure to moral hazard where forward integration can improve the manufacturing's access to accurate – and cost efficient monitoring of the distribution. This is supported in various studies, (e.g., Anderson and Schmittlein, 1984; Anderson, 1985; John and Weitz, 1988; Holmström and Milgrom, 1994) although others found inverse correlations (e.g., Baker and Hubbard, 2004; Brickley and Dark, 1987; Brickley et al., 2004; Lafontaine, 1992; Norton, 1988). Lafontaine and Slade (2007) distinguish between monitoring *quantities of inputs* and related outcomes and monitoring of *behavior* in relation to outcome. This can help us understand the different results. When the monitoring of *quantities of inputs* in markets are accurate and economical, there is less forward integration. Conversely, when the monitoring of outcomes is inaccurate and costly, there is more forward integration. When monitoring of *behavior* or entrepreneurial effort deals with plastic assets that potentially entail moral hazard (Alchian and Woodward, 1988), strong incentives from being the residual claimant from segregated asset ownership leads to less integration. An important difference is also that for metering *quantities of input,* the monitor does not need to know the business activities of the party being monitored. It just needs to assess the input quantities. This second type of monitoring presents different challenges. Here the monitor needs to have knowledge and access to evaluate the *behavior* around the intangible elements being monitored and metered.

3.1.6 Spillover and repeat business provide ambiguous results to forward integration: When a manufacturing firm sells its products through multiple distributors, the different units are exposed to both positive and negative externalities. For example, the manufacturer's brand can have a positive effect on distribution, where some agents can *free-ride* by using the brand value of the product, but also the efforts of other agents. Hence, the cost of providing effort is individual to the agent whereas the benefits are universal for the receivers, thus leading to more forward integration. When free-riding on the manufacturer's brand value is prevalent, it points to forward integration. At the same time, when the distributors' investments in customer satisfaction, loyalty, and repeat business is important, and originates from hard to monitor

personal effort, it points toward segregated asset ownership. This is due to the provider of effort being the residual claimant to profits from the repeat business.

3.1.7 Multiple tasks provide ambiguous results on forward integration: The agents' jobs often have multiple dimensions where several tasks compete for attention. When the distributors' face competing incentives from segregated asset ownership, it will often lead to lower maintenance of the manufacturer's assets (Simon, 1951; Williamson, 1975). The propensity to integrate depends on the characteristics of different tasks and the extent to which their returns are correlated. Hence, the marginal return of one task should also increase the return of other tasks to make the incentives effective (Shepard, 1993; Slade, 1996). When the ability to complete multiple tasks is important and technology can facilitate efficient coordination across tasks, it favors forward integration (Baker and Hubbard, 2004). When this is not the case, e.g., due to faulty measures or noisy signals, it leads the distributors to act and prioritize, for the manufacturer, in suboptimal ways. Therefore integration is often hailed for providing weak incentives to mitigate this adverse selection (Holmström and Milgrom, 1991; 1994). However, if the complementary activities are hard to measure and thus exposed to moral hazards, it will disfavor forward integration (Shepard, 1993; Slade, 1996) because the moral hazard costs are reduced and profits from prioritized, efforts are enhanced by segregated ownership of asset.

The empirical insights (3.1.1 - 3.1.7) provide several interesting points that are contradictory to normal moral hazard and agency theory. First, when downstream risk – in relation to asset investments increases (3.1.4) – this is connected with more forward integration as agency theory predicts (Jensen and Meckling, 1976). However when downstream risk related to the use of idiosyncratic resources and capabilities increase, it is related to less forward integration contrary to agency theory. This illustrates that upstream firms prefer stronger market incentives to solve this entrepreneurial challenge by maintaining segregated asset ownership. Secondly, despite high costs of monitoring of distributors' efforts, and the potential increasing presence of moral hazards, there are situations (3.1.2/5b/6/7) where segregated ownership again is preferred. This might seem at odds with the potential opportunism related to distributors' moral hazards both to shirk and to free-ride on specific investment interdependencies. Apparently in some settings the hard incentives from markets and costs of contractual governance seems to outweigh the benefits of integration. In short, the manufacturer using contractual transactions might perceive the costs from downstream opportunism to be higher, but the strong incentives provided by

markets rewarding distribution's entrepreneurial activities as residual claimant to these activities seem to outweigh these transaction costs. This has implications for the distribution of different resources and capabilities along the value chain and plays a role in relation to the distribution of the manufacturer's product.

4. DISTRIBUTION TYPOLOGIES

From the discussion of value chains and the empirical literature on forward integration, we now consider the role of downstream market-oriented activities and note three different types of distribution approaches that appeal to different market contexts. The market contexts are characterized by product complexity, the codifiability of processes, competences, and resources that engage entrepreneurial efforts to deal with more or less complex conditions. The distribution types are geared to deal with the challenges from the different market contexts.

4.1 Roles in manufacturing and distribution

Studies of how powerful 'lead' firms govern their global value chains (e.g., Gereffi et al., 2005, 2018; Gibbon et al., 2008) identify three key characteristics that determine their governance approach. The first characteristic is the *complexity* of the product-related transactions along the value chain. This entails diversity of information embedded in, e.g., product specifications, quality features, and related processes like manufacturing, distribution, and warranty handling. The information also relates to the planning of sourcing, supply lines, and delivery channels to include needed quantities and qualities based on efficient hands-off trading. The second characteristic is the *codifiability* of the product, meaning the process-related information, knowledge, and the ability to transmit the information from the lead firm to the distributors without creating additional transaction costs. The third characteristic is the *sufficiency* of the available resources and competencies of the lead firm that are needed to ensure instrumental efficiency of the required tasks within the distribution.

The relative importance and emphasis on these characteristics identify four different governance types of (external) market-driven supply chains in addition to (internal) integration through hierarchy. The first and simplest type is pure *spot market* trading among independent

firms along the value chain due to the low complexity of transactions, the ease to exchange market-related price information, and product knowledge in codified transactions. This means that each of the product markets possesses the necessary competences to produce required products without special transfer of knowledge and particular incentive systems (e.g., Hayek, 1945). The second type has *modular* relationships, where the complexity of tasks increases so they can no longer be made available in and cleared through simple spot market transactions. This requires that information and knowledge related to the underlying transactions can be codified and transmitted from the lead firm to the suppliers, as well as the suppliers must possess the necessary competences. The third governance type is *relational* as transaction complexity remains high but the ability to codify decisive information is low, which requires that exchange of tacit knowledge and information relies on human interaction. This requires a high level of necessary resources and capabilities among the suppliers to understand the demand of the lead firm producing the needed goods or services to stay competitive. The fourth type is constituted by *captive* relationships, where the lead firm engages in exclusive supply contracts where product specifications are defined from resources and capabilities inside the lead firm. The level of transaction complexity is high, as is the lead firm's ability to codify the transactions, but the required resources and competences among suppliers are not readily available.

Several aspects of the described governance types of external value chains are important in the context of forward integration. The degree of power retained by the lead firm, and hence its coordination authority, is lowest with spot market transactions and highest with captive relations. Spot market suppliers have the lowest exposure to specific firm interdependencies while captive suppliers have the highest degree of dependence on the lead firm. This has contractual implications. The ability to codify specific information and plan investments is important for writing contracts (Williamson, 1985), as is investing in valuable non-contractible knowledge and resources (Grossman and Hart, 1986).

While the studies of global value chains (e.g., Gereffi et al., 2005, 2018; Gibbon et al., 2008) focus on the supply-base of a producer driven lead firm, they also provide perspectives for understanding the governance of downstream distribution firms, although there are important differences. In the context of supply and backward integration, it is assumed that the lead manufacturing firm possesses the combinatory capabilities (Nooteboom, 2004) required to use

sourced inputs, including the ability to define the complexity of inputs needed to compete in its own product markets. This can be very different in the case of forward integration, in which the integrated manufacturing firm is moving into a downstream domain (Thompson, 1967) where it has less a priori knowledge, experience, and insight. A lead manufacturing firm that engages in downstream activities will face many challenges as described in the governance of the supply chain, but also confronts a product market that is (potentially) removed from the firm's existing capabilities and resources (Teece, 1982). In this context, the product and process complexities determine the tasks and efforts provided by distribution as it reaches out to customers further downstream in the final product markets. Forward integration therefore introduces a need to codify product complexity. This is a two-way road where distribution codifies market specific knowledge to the manufacturing as well as manufacturing codifies product complexity to distribution.

These conditions affect the role of forward distribution in relation to upstream manufacturing and can be discussed in three different settings, referred to as (1) simple selling ('markets'), (2) directional distribution ('captive supply'), and (3) complex distribution ('relational supply') (Gereffi et al., 2005, 2018).

4.2 Manufacturing and simple selling

Eventually all manufacturers need to sell their products. Whether this is done in the simplest form as 'over the counter' sales to whomever walks in, using technologies like telephone and digital platforms, or employ a sales force, it all represents different ways to sell outputs. The 'over the counter' approach for example will eventually face geographical limitations. Firms that wish to expand will have to meet downstream customers in an extended way usually by engaging some variant of a sales force. If the manufacturing firm wants to avoid employing its own direct sales-force, this activity can rely on 3rd party outside sales representatives, or whole-sellers (Anderson and Schmittlein, 1984). Whole-sellers usually undertake different kinds of inventory storage and selling activities that use a simple mediating technology (Thompson, 1967).

A manufacturing firm engages in simple selling when the product complexities, i.e., the mutual dependencies along the value chain towards the adjacent industries, are low and outputs

and processes between manufacturing and distribution can be codified. If the manufacturing firm has the same interpretation of the supply-chain (Gereffi et al., 2005, 2018) as the distributors without imposing specific information or knowledge demands to the sale of the product, it is considered simple selling. This normally relates to the selling of a product without any need for mutual specific investments, where price and quantity is determined by simple market exchange conditions. However, the profits made by the manufacturing firm are subject to appropriation by market forces (Porter, 1979) like haggling, new entrants, or substitution of comparable products. Under simple selling, the manufacturer devotes limited effort to influence, or create demand beyond the distributors. Therefore, there are no major switching costs between the manufacturer and distributors.

With the market between the manufacturing industry and distribution only serving to facilitate trade, it effectively distributes responsibilities and authority. Each sequential industry and the firms within them remain responsible for solving their entrepreneurial challenges; they secure their own instrumental and economic effectiveness using own resources, competences, and capabilities (Nooteboom, 2004). This gives distribution the freedom to source and market competitive products. If the manufacturer's products are no longer competitive and fail to fulfill the specifications set by downstream distribution, they will be discharged in the distribution industry's selection process. This is why it remains the responsibility of the manufacturer to be competitive in the intermediate product markets and satisfy further downstream industry demand. If the manufacturing firm integrates the mediating distribution activities without imposing mandatory internal transfers, the organizational structure resembles what Williamson (1975) refers to as the pure M-form, where decisions and actions are rewarded by internal decentralized incentive systems.

4.3 Manufacturing and directional distribution

When an upstream manufacturing firm needs the distribution to ensure sufficient demand and distribution of its products in downstream markets, different roles and responsibilities emerge between entities along the value chain. The manufacturer's interest and demand in relation to the distributors' actions – including product sales and services – must be specified and codified. This ensures that distribution engages in activities that correspond to those requirements. This 'directional distribution' concept resembles, although is not necessarily the same, what is known

as a ‘traditional’ franchise (Lafontaine and Raynaud, 2000; Lafontaine and Slade, 2007)[5] or captive supply to use the global value chain terminology (Gereffi *et al*. 2005).

Under directional distribution, the value is essentially carried by the product complexity or brand reputation of the upstream manufacturer. To the final user, the product appears in a form that only requires little value-adding activities from distribution. This has several implications for the division of responsibility and authority, along with the coordination of interdependencies between manufacturing and distribution. With low product complexity and capabilities in distribution, the manufacturer remains responsible for developing both instrumental and economical effectiveness in this long-linked mediating organizational technology (Thompson, 1967). This means that the manufacturer must deploy resources and capabilities (Nooteboom, 2004) to ensure downstream product attractiveness. The revenue generating product must have enough attractiveness among final users to allow for the sharing of quasi rents from asset specific investments (Klein et al., 1978). In other words, the manufacturer’s product must hold a satisfactory revenue potential and have a sourcing price that is sufficiently low. This allows manufacturing to share rents, e.g., by paying a provision to distribution hereby sharing the profits to incentivize asset specific investments that benefit both manufacturing and distribution (Klein, 1995; Lafontaine and Raynaud, 2000).

In this setting the activities of downstream distribution also resemble whole selling, where the majority of investments are made on specific tangible assets with only a minimum of added value from specific intangible asset investments. Value from the distribution’s effort therefore takes more the shape of an ‘add-on’ to support the manufactured product (Lightfoot, Baines and Smart, 2013; Mathieu, 2001; Oliva and Kallenberg, 2003; Tukker, 2004). This division of competence and responsibility makes it easier for the manufacturer to explicitly codify product complexity and coordinate interrelated activities, which is reflected in the contracts that specify the terms of cooperation. The contracts are drafted by the upstream manufacturer. It includes codifying information about conditions and standards for the distribution industry in relation to cooperation. It also applies to the specific obligations of investments and deployment of downstream resources (Klein, 1995). Hence, the upstream manufacturer coordinates downstream resource utilization through planning and standardization (Thompson, 1967) to

[5] A franchise is usually characterized by a franchisee operating under a franchisor’s name and trademarks; the franchisor provides some support and can exercise significant control over the franchisee’s operations. The franchisee is required to pay some predefined amount to the franchisor and sometimes obliges the franchisor to transfer knowledge to the franchisee.

ensure own output and aggregated profits. It should also be noted that the manufacturer now is exposed to double marginalization (Riordan, 2008; Pindyck and Rubinfeld, 2013) because the final product's market demand is interdependent with the contractual specifications of the distribution's value adding investments and activities.

This kind of contractual setting, however, exposes manufacturing to transaction costs (Arrow, 1969; Williamson, 1971) as distribution might fail to make required investments and shirk on needed effort. The manufacturer therefore needs to ensure that attempts by distribution to shirk, or free-ride on effort and investments, are effectively contained by internalizing incentives or punishments (Lazear and Gibbs, 2014). The reason for this is that costs imposed by external conditions will dilute the product value and thereby accrue to the manufacturer. Since the profits of distribution relies on the sharing of aggregated quasi rents, this sharing arrangement must be linked to some easy to measure reliable indicator of the distribution effort (Anderson and Schmittlein, 1984; Lafontaine and Raynaud, 2000; Lazear and Gibbs, 2014). Such self-enforcing contracts are preferred to hedge against potential costs from MH and underinvestment issues linked to the possibility of losing access to the sharing of rents (Klein, 1995; Lafontaine and Raynaud, 2000). At the same time manufacturing's required sharing of rents is supposed to hedge the distributors against opportunistic moves by the manufacturer to over-specify required investments. This means that to incentivize distribution to make investments according to the manufacturer's specifications, the stream of rents from these investments must exceed the associated costs.

For the manufacturer this creates a fundamental challenge in relation to the business model's value offering. In this long-linked mediating distribution setting, the responsibility for the competitiveness of products and related distribution activities rests within the manufacturer who holds the authority to define investments and activities. The question here ultimately is whether the upstream manufacturer is able to secure access to the downstream product markets. This relies on an ability to develop and maintain a product complexity that creates enough rents for sharing to incentivize downstream distribution and retain trust in manufacturing's long-term competitiveness. If the manufacturer's product offering over time takes on more a commodity-like character, this could pose a challenge. This would put pressure on the market price and the profits to effectively create a situation where the manufacturer is forced to share earnings below rents to the distributor to maintain self-enforcing incentives. If the distributor does everything it

is contractually committed to, but business still is not viable, there are only two options. To avoid closure of the distribution business, which will restrict the manufacturer's sale, the manufacturer can integrate forward. Alternatively, the distributors can engage in additional value-adding activities outside the terms of the contract, which potentially can create conflicts when prioritizing efforts and attenuate new incentive conflicts. Managing these important value-adding activities across both manufacturing and distribution is a model of cooperation, we will discuss next.

4.4 Manufacturing and complex distribution

Inadequate downstream distribution has been one of the major reasons used to explain the emergence of forward integration in the U.S., (Chandler, 1977) arguing that manufacturing has the knowledge to codify product complexity for use in downstream distribution activities. However, when the organizational technology no longer is purely long-linked but also comprises mediating and intensive technologies in the distribution (Thompson, 1967) as discussed above, the value chain challenge is different. Then the manufacturer's product no longer appears in (almost) finished form but requires additional value-adding activities from distributors to be effective in use (Baines et al., 2007; Mathieu, 2001; Oliva and Kallenberg; 2003; Tukker, 2004). In essence, when long-linked, mediating, and intensive technologies are at play, the distributors no longer just bridge the manufacturer's products to the final users but undertake an essential value-adding role. The distributors now combine the manufacturer's competences and resources with their own capabilities and idiosyncratic resources (Nooteboom, 2004; Teece, 2010; Thompson, 1967) to generate and form more competitive market offerings. These are typically specific and tacit in nature, therefore difficult for the manufacturer to codify in explicit contracts.

The role of distributors in bridging the manufacturer's output to the end-users draws on their own knowledge about intensive product markets that have now increased in complexity. Although the product remains an integral part of the total offering, it requires additional specific information and knowledge about local market conditions that rests with the distributors. This is used to generate more appropriate tailored solutions that can meet the customers' specific demands for the product in its use. This is the case when additional resources and investments

unknown to the manufacturer become mandatory to increase product attractiveness and competitiveness in the final product market. Value-adding intangible investments can take many different forms, like personal customer relations (Lightfoot, Baines and Smart, 2013) and an entrepreneurial mindset (Woodruff, 2002) that characterize these so-called multi-tasking environments (Holmström and Milgrom, 1991, 1994) where many activities are integrated at the distributors' discretion. This is often the case with durable products that require additional services during its life-cycle or services that prompt recurring purchases (e.g., Baines et al., 2007; Brickley and Dark, 1987; Brown and Neu, 2005; Oliva and Kallenberg, 2003). These value-adding activities can extend the manufacturer's product in parallel with other products including features downstream entrepreneurs finds valuable (Thompson, 1967).

The multiple locations of specific knowledge, capabilities and resources will change the interdependencies between manufacturing and downstream distribution. Even though coordination, distribution of power, and authority might not be evenly distributed as with simple selling and clear market break-even points, activities are now more reciprocal; this is because of the mutual dependence on specific investments, capabilities, and incentives (Thompson, 1967). Hence, the manufacturer and the distributors are required to resolve the entrepreneurial challenge by coordinating independent value-adding activities through a form of relational governance (Gereffi *et al*. 2005). This also means that responsibility for the use of specific knowledge and resources located with distribution is critical to ensure the instrumental and economic efficiencies (Thompson, 1967). If the distributors do not ensure inclusion of up-to-date specific knowledge and resources, the value-adding of market-related activities will eventually decrease. This will then turn the relationship into a simple- or directional distribution setting. Therefore, incentive structures must be in place to ensure distributor investments and engagement of specific knowledge and resources (Holmström and Tirole, 1991)

Complex distribution creates contractual challenges to align the interests between manufacturing and distribution. Specifying tangible investments pose less of a challenge for the manufacturer. However, maintaining aggregated competitiveness of a long-linked, mediating and intensive technology (Thompson, 1967) is challenged by the potentially conflicting interdependencies between manufacturing and distribution. Developing contracts for use of intangible resources like entrepreneurial effort, specific, investments, and deployment of unique downstream resources to satisfy the demand of final buyers is increasingly difficult. This

ultimately leaves contracts incomplete with certain elements non-contractible, thus posing several challenges to incentivize distribution (Grossman and Hart, 1986; Hart and Moore, 1990). Therefore this creates an incentive problem between the distributors' effort, investments, and use of tacit knowledge and the related output effects that are difficult to observe and evaluate objectively. The increasing plasticity of idiosyncratic resources (Alchian and Woodward, 1988) will also expose the manufacturer to potential moral hazard costs. Hence, the manufacturer needs to incentivize the distributors using contracts where distribution is the residual claimant of profits (Lafontaine and Raynaud, 2000). These incentives are rooted in assets ownership and entrepreneurial effort as the driver of investment for future returns (Brickley and Dark, 1987; Grossman and Hart, 1986; Holmström and Tirole, 1991; Woodruff, 2002).

If the business model is no longer able to generate the necessary rents this can lead to a dilution of the manufacturer's authority and ability to prioritize the distributors' investments and efforts. The manufacturer is no longer able to exercise the same specific contractual control over all investments and activities pursued by downstream partners. With both the manufacturer and distributors' being residual claimants from their own actions, there are potential conflicts of interests in the prioritization of multiple activities (Simon, 1951; Williamson, 1975). It is the pressure to serve respective equity interests that is the source of possible conflicts and incentive misalignments (e.g., Holmström and Milgrom, 1991, 1994; Shepard, 1993; Slade, 1996). With the reduced authority of the manufacturer, the downstream distributors might undertake actions that are in their own interest, but not the manufacturer's. This might derive from the opportunism to break contractual terms, but also from changing conditions with opportunities and threats that request the use of specific downstream information, resources, and capabilities.

The determinants of the three distribution types of directional, complex, and simple selling are summarized in Table 2 below and outline different settings for the downstream governance of long-linked value-chain technologies.

Determinants of distribution type \ Distribution types	Directional distribution (Captive supply)	Complex distribution (Relational supply)	Simple selling - Spot market transaction
Complexity of distribution (final product market complexity - value chain interdependencies)	High	High	Low
Manufacturer's competences and capability to codify the complexity of transactions, engaging own resources and capabilities	High	Low	High
Distribution's idiosyncrasy of transactions, resources, capabilities, and knowledge	Low	High	High
Distribution's engagement in its own entrepreneurial challenge	Low	Medium	High
Manufacturer's responsibility towards distribution's competitiveness in final product markets	High	Medium	Low
Manufacturer's degree of coordination authority	High	Medium	Low
Manufacturer's exposure to incentive misalignment from sequential monopolies. (e.g., double marginalization)	High	Medium	Low
Manufacturer's ability to monitor distribution's costs related to moral hazard	Medium	Low	High
Manufacturer's exposure to distribution's moral hazard	Medium	High	Low
Contract type and incentive methodology	Self-enforcing	Residual claimant	Markets

Table 2. Three characteristic typologies of the forward integrated value chain

The directional and complex distribution contexts of forward integrated supply chains display important value-creating differences along the value chain (Figure 1) as distributors interact with final users in the market for finished products (market 3). The liaison between manufacturing and forward distribution partners introduce interdependence complexities linked to mutually dependent transactions. This is where the codifiability of market information, specificity of competences, and incentives to promote effort are very different. If the

manufacturer, in a directional distribution setting, requires high investment in tangible assets (the Y axis) and they contribute to the product value but only little to procedural activities (the X axis), the slope will be steep but the length of activities short. Hence, complex distribution will typically cross a steeper slope from the use of non-codified entrepreneurial activities and use of idiosyncratic resources, but possibly also a longer stretch of activities before the product is sold. The flatter the slope, i.e., the lower the value creation, and the shorter the stretch, i.e., the fewer activities to integrate, the less problematic the governance challenges. The steeper the slope, particularly if the value creation derives from distributed idiosyncratic plastic resources, and the longer the stretch of activities, the higher is the difference in the resources and capabilities contributed by two sequential firms.

5. DISCUSSION

The preceding analysis of forward integrated value chains has a particular focus on the interdependencies between manufacturing and the downstream distribution activities. The role assumed by the distribution is important to understand the economic rationales adopted by a manufacturing firm when it decides to integrate forward and considers the governance challenges the ensuing integration of activities will bring.

A marginal downstream extension of the value chain based on existing resources and competences (Argyres, 1996; Barney, 1999; Demsetz, 1988) in simple selling markets is the most basic form of forward integration. This market-based governance approach applies to transparent market settings of less complex products with codifiable features; this can inform effective price settlements in efficient market transactions. This marginal extension in product complexity also preserves existing responsibilities and authority with financial incentives attached to existing ownership structures. The entrepreneurial responsibility remains within existing structures and competences, making the codification of information related to product complexity relatively easy and costless (Gereffi et al., 2005, 2018). A marginal extension of the value chain does not create increased exposures to market opportunism from lock-in to adjacent firms since trade is conducted in open spot markets. The manufacturing and distribution firms operate as independent profit optimizing entities in their respective industries. Here, costs and

incentives are effectively internalized through residual ownership to value-creating assets without changes in organizational structures.

In long-linked value chains (Thompson, 1967) where distribution serves as a necessary mediating instrument to bridge the manufactured products with downstream product markets, various interdependencies between adjacent value chain activities emerge. The deployed organizational technology must satisfy the demands for both instrumental and economic efficiency (ibid) in upstream manufacturing as well as downstream distribution. However, the coordinating responsibility and authority as well as the incentives to conduct activities are very different depending on the role of distribution as a conduit to the final product market.

Under directional distribution, product complexity originates from resources, capabilities, and entrepreneurial efforts that reside with the upstream manufacturing processes. The adjacent distribution activities are linked to manufacturing that defines the asset specific tangible investments needed to secure that the products are sold and distributed with only a limited need to focus on intangible distribution investments. The economic base for this governance approach are the rents created from the competitiveness of the manufacturer's products and ability to codify two things: the activities and investments. Both are needed to accommodate the downstream distribution. The coordination of the long-linked mediating interdependencies between manufacturing and distribution is managed through planning and standardization of processes that are instigated through the manufacturer's authority. In this way the technological core of the manufacturing firm is sealed off from potential influences of fluctuations in the product market, thereby ensuring operating efficiency in manufacturing.

To attract the necessary specific investments and efforts from the market bridging distribution entities enforcing the coordinating authority of manufacturing there must be sufficient incentives and rewards to motivate the distribution agents. This is done by manufacturing sharing the rents in amounts that, at a minimum, are equal to the distributors' external opportunity costs (Klein, 1995; Lafontaine and Raynaud, 2000). In short, the manufacturer has sourced authority and coordination rights from the distributors to decide on resource allocation and specific asset investments by sharing rents and that align their interests (Simon, 1951; Williamson, 1975).

However, as observed from the empirical research on forward integration, directional distribution is not immune to transaction costs. These costs relate to incentive misalignment from sequential monopolies. If the manufacturer holds some kind of brand recognition in the final product market, the distributors can free-ride on the brand value to internalize profits and externalize costs to the manufacturer and other distributors (Carves and Murphy, 1975). While the required investments in specific tangible distribution assets (Klein et al., 1978; Klein, 1995; Williamson, 1979, 1985) are relative easy to police, they can be subject to moral hazard if they are plastic (Alchian and Woodward, 1988). However, the implied self-enforcing contracts (Klein, 1995; Lafontaine and Raynaud, 2000) will lose their correcting effect if the distributors' efforts cannot be related (directly) to output, or the relationship is difficult to verify. Therefore the manufacturer might share quasi rents by paying a provision without necessarily receiving a return from the distributors' effort.

This situation has been a main driver of forward integration, because it improves the ability to measure the effort provided by the distribution (e.g., Anderson and Schmittlein, 1984; Brickley and Dark, 1987; Kosová et al., 2013; Woodruff, 2002). The double marginalization problem (Eccles, 1985; Riordan, 2008) can be exacerbated by information asymmetry that may cause the manufacturer to share more quasi rents with distribution than is necessary thereby diluting the profits of the upstream manufacturing. In this context it is worth noting that empirical studies find that the need to incentivize upstream (manufacturing) effort leads to more forward integration (e.g., Lafontaine, 1993; Lafontaine and Shaw, 2005; Nickerson and Silverman, 2003; Scott, 1995).

The complex distribution setting presents diverse challenges. The competitiveness of this long-linked, mediating, and intensive technology (Thompson, 1967) depends on both manufacturing and distribution contributing to the product complexity in final product markets. The role of distribution bridging the manufactured outputs into the final goods and services required by the end-users is more complex. The distribution must engage own value-adding resources and capabilities that are specific to the distribution activities. This includes specific market knowledge that often is tacit in nature and embedded in idiosyncratic customer relationships that can ensure end-user satisfaction and loyalty for future business engagements (Brickley and Dark, 1987; Kosová et al., 2013; Lafontaine and Slade, 2007). This makes the interdependencies and incentives between manufacturing and distribution very different

compared to the conditions under directional distribution. This more symmetric location of needed resources and capabilities with reciprocal interdependencies requires a governance approach, where responsibilities and authority are distributed more evenly between the value chain activities (Aghion and Tirole, 1997; Eccles; 1985; Galbraith, 1983; Thompson, 1967).

This has important implication in several ways. With the distribution using its own idiosyncratic resources and capabilities to accomplish entrepreneurial value-adding activities towards final customers, importance increases due to the reciprocal interdependencies (Thompson, 1967). The knowledge generated by downstream distributors serves as important coordination input to the upstream manufacturer as the means to improve the intermediary product, based on mutual adaptation between manufacturer and distributors (ibid). Furthermore, high plasticity (Alchian and Woodward, 1988) of distributor specific assets and resources makes the codification of the distributors' efforts to the final product complexity virtually impossible. The plasticity of specific assets combined with asymmetric knowledge makes measures of the distributors' input very imprecise and costly to generate (Alchian and Demsetz, 1972). Hence, it is clear that possible transaction costs related to the distributors' behavior are higher compared to the situation under directional distribution, where improved metering of effort is the answer. Therefore segregated ownership of assets where each party remains the residual claimant to their own unobservable inputs like behavior and entrepreneurial effort is the proposed answer to deal with this situation consistent with findings in empirical studies (Brickley and Dark, 1987; Kalnins and Lafontaine, 2013; Kosová et al., 2013; Lafontaine and Slade, 2007; Woodruff, 2002).

This discussion relates mostly to moral hazard issues, where the prioritization of entrepreneurial effort and behavior are necessary precursors to future profits. The inability to observe entrepreneurial effort and multitasking in downstream distribution is not necessarily a cover for potential moral hazard costs (Shepard, 1993; Slade, 1996), but may reflect a necessary prioritization of effort to generate future cash flows from specific assets ownership (Baker and Hubbard, 2004; Brickley and Dark, 1987; Woodruff, 2002). The ability to profit as a residual claimant to assets ownership incentivizes and rewards these otherwise non-contractible and unobservable efforts (Grossman and Hart, 1986; Holmström and Tirole, 1991). Firms that choose to integrate forward in a complex distribution setting may incentivize unobservable effort using aggregated indicators related to asset value from business unit performance

(Chandler, 1977; Holmström and Tirole, 1991; Lazear and Gibbs, 2014; Oxley and Pandher, 2016; Silverman and Ingram, 2017) when no direct observable indicators are available. This presents a governance dilemma. While incentivizing unobservable entrepreneurial effort related to the performance of distribution will enforce the prioritization of own asset value, it also removes the coordination advantage from integrated ownership.

Looking at complex distribution from Holmström and Milgrom's (1994) view of the firm as an incentive instrument reveals some interesting insights related to the boundary conflicts discussed above. By providing the integrated distributors with job security to attain control over the integrated distribution (Coase, 1937; Simon, 1951; Williamson, 1975), the responsibility and authority to direct distribution effort is placed squarely with the manufacturer. The challenge here is that manufacturing does not have the necessary knowledge about the product complexity or the capabilities to codify this. So, while common asset ownership can remove opportunistic appropriation of quasi rents (Klein et al., 1978; Williamson, 1979, 1985), it also mutes the incentives to integrate the distributors' unobservable personal effort when they are not residual claimants (Grossman and Hart, 1986; Holmström and Tirole, 1991; Kosová et al., 2013; Silverman and Ingram, 2017; Woodruff, 2002). This is particular relevant under complex distribution where idiosyncratic resources and competences needs to be incentivized. A similar issue arises when the direct indicators of multitasking efforts are imprecise (Alchian and Demsetz, 1972; Holmström and Milgrom 1991). Under directional distribution, the specific asset investments are defined by the manufacturer. Under complex distribution, the distributors use their own idiosyncratic knowledge to decide on investments in specialized assets and resources. For a manufacturer that chooses to integrate forward, this makes job design more problematic because the downstream competitiveness is embedded in idiosyncratic resources that are unknown to the manufacturer. A job design that removes the distributors' prioritization of idiosyncratic resources requires that it overall would be more profitable to prioritize the manufacturer's assets as under directional distribution; or, the common incentives from specific assets along the long-linked value chain can be somehow aligned. These issues illustrate the conflicts in practice between different theories and their prescriptions about the governance of forward integration.

Another aspect of directional and complex distribution is whether these governance approaches are static or evolve as a function of a changing market context. Some manufacturing

firms have a product where the complexity in the final product markets are so valuable that it is insensitive to minor developments in product complexity in the distribution industry. Yet, other manufacturing firms may be faced with increasingly complex and dynamic market contexts for their final products that they are gradually forced to consider a new governance approach more that is appropriate to deal with complex distribution. Major changes in the market of final users may increase product complexity over time, and disruptive competitive innovations in distribution may cause dramatic changes on demand conditions that require a shift from directional to complex distribution. For a path dependent manufacturing firm operating a directional distribution the requirement to innovate in downstream advanced value, adding activities exploring for new resources and capabilities can pose severe challenges (Galbraith, 1983, Nooteboom, 2004; Teece, 2010; Teece, Pisano and Schuen, 1997). Accordingly, empirical studies (Benedettini, Neely and Swink, 2015; Gebauer, Fleisch and Friedli, 2005; Neely, 2008; Visnjic, Weingarten and Neely, 2016) find that manufacturing firms often struggle with the transformation from being driven by the manufactured product into profiting from downstream complex value adding activities.

6. CONCLUSION

This article has studied the literature on value chains with a focus on different industry roles and the links between adjacent industries. The analysis identified three forward integration types of spot market transactions, directional distribution, and complex distribution. The theoretical reasoning around these distribution types considers the complexity of manufactured products and the role of downstream adjacent distribution firms in increasingly complex contexts. The assessment of downstream value adding activities in long-linked directional and complex distribution contexts considers the interdependencies between manufacturing and distribution and the economic rationales arguing for forward integration and post-integration governance. The distribution of responsibility and authority between manufacturing and distribution has implications for the use of valuable idiosyncratic resources and capabilities along the value chain and hence the generation of corporate profits.

The choice of economic rationales to guide an integrated manufacturing firm on post-integration governance is not straightforward, since the use of idiosyncratic resources and

competences in the downstream distribution industries can vary greatly. In addition, the economic literature on firm boundaries provides conflicting perspectives on the financial rationales for forward integration. The directional distribution context is often applied in forward integration analysis to improve internal monitoring that can in turn reduce incentive misalignment and moral hazard costs. In contrast, the complex distribution context points to segregated asset ownership that provides incentives for entrepreneurial activities as residual claimants to own difficult to monitor efforts. Forward integration into complex distribution represents the highest possibility to create strategic advantages from product differentiation and improved customer relationships. However, the mutually interdependent long-linked activities also create the highest risk of failure due to the potential of moral hazards and distorted incentives inside the integrated value chain.

Future research and limitations

The managerial challenge of complex distribution where economic boundary theories advocate segregated asset ownership, and the difficulty of forward integrated manufacturing firms to turn this endeavor into profits, pinpoint the difficulties associated with ex post integration (Zhang and Banerji, 2017). The governance approaches discussed relate to delegation of authority and the incentives provided to manage the long-liked interdependencies between sequential business activities. This occurs when the corrective power of markets and segregated ownership of assets is muted. This inquiry into the underlying economic rationales arguing for forward integration identify potential theoretical contradictions and show the complexity of determining the proper governance approach, as demonstrated by the mixed performance of integrated manufacturing firms. Hence, there is a need to gain deeper insights into the decision processes adopted by contemporary manufacturing firms that engage in forward integration and better understand how different governance approaches are adopted with diverse performance outcomes. Conducting detailed case studies of representative firms seem to be a promising avenue to provide a better understanding on *how* firms govern interdependent value chain activities, along with the reasoning adopted to explain *why* certain approaches and structures are adopted (Yin, 2018). For this purpose, we modestly suggest that the identified directional and complex distribution contexts can serve as useful typologies to frame both single and comparative case study approaches.

It has not been the aim of this article to claim that one distribution type is superior to another. The goal has rather been to bring attention to the complexity of guiding different distribution types that cater to different, and sometimes conflicting rationales for forward integration. But that nonetheless have real performance implications for contemporary manufacturing firms. If the integrated manufacturing firms are misaligned with the demands of the final users of their products and fail to implement a governance structure that properly engages the valuable contributions from distribution, it can have severe consequences for the profitability and viability of those companies.

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CHAPTER 3:

FORWARD INTEGRATION:

THE GOVERNANCE OF INTERDEPENDENCIES BETWEEN MANUFACTURING AND DISTRIBUTION

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ABSTRACT

Forward integration into sales and distribution is a commonly observed strategy across manufacturing industries to improve coordination, product differentiation, and customer relationships. However, manufacturing firms contemplating forward integration are often faced with different economic integration rationales addressing both contractual and non-contractual considerations that reach contradictory verdicts. We consider the impact of these theoretical rationales for forward integration and analyze the implication for governance of the integrated firm under two different distribution typologies. Directional distribution applies to relatively stable market conditions where the manufactured core product is central, whereas complex distribution refers to dynamic market contexts of high product complexity that require a more interactive governance structure. Manufacturing firms that fail to align governance to the requirement of the distribution typology can fall into a commodification trap with deteriorating competitiveness. In contrast, firms that integrate the forward business activities effectively to deliver complete product market offerings can use this to create sustained competitive advantage. Hence, effective structural arrangements in the integrated firm should accommodate the different interdependencies between manufacturing and distribution. We suggest the distribution typologies and their theoretical foundations can be useful in future empirical studies to uncover successful governance approaches to manufacturing's forward integration into complex distribution and services.

Key words: Corporate strategy, distribution, forward integration, governance, incentives, interdependency, organization structure, transfer pricing, vertical integration.

INTRODUCTION

For national output, the tertiary service sector is taking increasing importance in industrialized countries where its share in relation to manufacturing has grown steadily since the 1960s (Bell, 1973; EU Commission, 2017; Davies, 2004; Gebauer et al., 2012; Stanback, 1979; Triplett and Bosworth, 2004). For traditional manufacturing firms that are facing growing competitions e.g., low-cost globally distributed manufactures (Wu et al., 2005), the advice is often to integrate forward into more value adding and profit promising services (e.g., Gadiesh and Gilbert, 1998; Davies, 2004; Rungi and Del Prete, 2018; Wise and Baumgartner, 1999). However, forward integration often fails to yield the anticipated profits which is commonly referred to as the "servitization paradox," (Benedettini et al., 2015; Gebauer et al., 2005; Neely, 2008; Suarez et al., 2013; Visnjic et al., 2016). As part of the solution to this paradox, various organizational structures are proposed to increase organizational customer focus, culture, and performance measurement (e.g., Bustinza et al., 2015; Gebauer et al., 2005; Gebauer et al., 2008; Oliva and Kallenberg, 2003. But when the manufactured product remains an integral part of downstream activities (Gebauer et al., 2010; Neu and Brown, 2005), this creates long-linked interdependencies where coordination between the upstream manufacturing and downstream distribution, and its service activities is needed (Thompson, 1967). This paper seeks to disentangle some of the governance challenges that long-linked manufacturing firms face after integrating forward.

Vertical integration has long been a companion to corporate strategy development (e.g., Balakrishnan and Wernerfeldt, 1986; D'Aveni and Ilinitch, 1992; Harrigan, 1984, 1985, 1986) where forward expansion from manufacturing to distribution and sales related services has special significance (e.g., Lightfoot et al., 2013; Cadeaux and Ng, 2012; Shervani et al., 2007; Teece, 2010). Advantages from forward integration towards distribution and services are many, including stable revenues and profits (Wise and Baumgartner, 1999; Raddats and Easingwood, 2010), diversified business activities (Gebauer et al., 2011; Story et al., 2017), and enhanced competitive advantages (Baines et al., 2009; Bustinza et al., 2015). They also include traditional boundary economics like lower transaction costs and improved monitoring relating to agents' moral hazard (e.g., Anderson and Schmittlein, 1984; Brickley and Dark, 1987; Klein, 1988; Lafontaine and Slade, 2007; Nickerson and Silverman, 2003; Shepard, 1993). On the other

hand, in complex business contexts where the value proposition to the final customers is less tangible (e.g., Baines et al, 2007; Mathieu, 2001; Oliva and Kallenberg, 2003; Tukker, 2004), depends on entrepreneurial engagement, and unique downstream resources and capabilities (Lightfoot et al., 2013; Neu and Brown, 2005; Nooteboom, 2004; Teece, 2010), the ability to accurately meter agents activities is severely challenged. Here, the theoretical considerations propose contracts that reward the residual claimants and thereby advocate segregated ownership of assets, i.e., the opposite of forward integration (e.g., Brickley and Dark, 1987; Baker and Hubbard, 2004; Grossman and Hart, 1986; Kosová et al., 2013; Lafonatine and Slade, 2007; Woodruff, 2002).

Despite these equivocal prescriptions from theory, we continue to observe that contemporary manufacturing value-chains continue to integrate both upstream and downstream (Del Prete and Rungi, 2019). Just as the supply of manufacturing firms differ in complexity (Gereffi, et al., 2005; Gibbon et al., 2007) so does the complexity of downstream tasks (Baines et al., 2007; Mathieu, 2001, Tukker, 2004,) and therefore interdependency in relation to the manufacturing firm (Bering, 2020; Neu and Brown, 2005). Therefore, governing forward integration based on conventional theory aimed to reduce moral hazard can have devastating results if the complexity of downstream entrepreneurial resources and capabilities are important. The reality is that can observe firms with integrated distribution displaying both good and bad governance approaches and we can learn from this. The successful firms govern to improve the value proposition of the final buyers that increase customer satisfaction and loyalty to gain a competitive advantage (Bustinza et al., 2015). We see this in European manufacturing. The heavy-truck and bus industry is an example where needs for transportation in, e.g., agriculture, construction, retail, and public sectors drive the demand. Here some companies clearly outperform others over extended periods of time, creating superior sales growth and higher profits. To achieve this successful governance of forward integration, the internalization of activities must be more efficient and effective than contractual market transactions.

This leaves managers working in real business scenarios with different and very concrete challenges that fail to comply with the proposed stringency of different economic integration rationales proposed by academia looking at firm boundaries. Managers do not have the luxury of basing integrating on a proximate theoretical approach. They need to “govern” the actual situation and make decisions despite the often conflicting rationales provided by different

academic strands. For practitioners and academics alike, this situation poses a problem that is difficult to handle and poorly understood, thus highlighting a serious gap between theory and practice where large corporations operate without meaningful governance prescriptions. This is the conundrum that the article attempts to address by delving into the governance challenges and tradeoffs manufacturing firms face when complex downstream markets are internalized through forward integration.

To advance this field of study, this article analyzes the governance of long-linked interdependencies between manufacturing and distribution following the decision to integrate downstream business activities closer to the final market. In doing so, it considers the role of distribution as a bridge between the manufacturer's output and the specific customer needs in the downstream product markets (Bering, 2020). While traditional firm boundary theory approaches to analyze forward integration often assumes away the presented conundrum, other management fields have observed related issues linked to the concept of servitization. Servitization looks on services as a way to extend traditional product offerings and therefore adds to the discussion of forward integration into distribution services (e.g. Baines et al., 2011; Benedettini et al., 2015; Story et al., 2017; Visnijc et al., 2014; Woodruff, 2002). Here internal structures and the application of organizational capabilities are imperative for the performance effects of forward integration. This article provides important analytical insights to better understand the role of entrepreneurial effort and supportive governance structures with balanced authority and incentives along the integrated value-chain.

The remainder of the paper is structured as follows. The next section describes how value-chains use contracts and markets to govern the roles undertaken by distribution as a bridge between manufacturing and end-users in the final product markets. Subsequently, the implied governance mechanisms for forward integration are assessed in the context of directional and complex distribution types that represent alternative market conditions. Finally, the major analytical insights are summarized and implications for governance practice outlined with recommendations for future research on forward integration as a viable corporate strategy.

1. THE ROLE OF THE DISTRIBUTION IN LONG-LINKED MANUFACTURING.

We have often praised markets for effective distribution of knowledge, incentives, and determining prices (Hayek, 1945), which makes simple spot market transactions particularly relevant to exchange standardized undifferentiated products. However, we also observe that many products and semi-produce supplied from manufacturers are not exchanged as simple spot transactions in the next adjacent product market, but are produced for specific use in particular downstream applications that need the involvement of specialized distributors. The manufacturer's ability to generate tangible product innovations may require complementary market insights and services to both capture and deliver the proper value proposition to the end-users (e.g., Teece, 1986). This shift from a singular focus on the product quality to incorporate other value adding market-oriented services (e.g., Baines and Lightfoot, 2014; Mathieu, 2001; Teece, 2010; Tukker, 2004; Visnjic and Van Looy, 2013) changes the interdependencies between the distribution activities and manufacturing. The distribution function now serves as an indispensable part of the value chain that undertakes coordinated tasks like innovating specialized marketing services (Baines and Lightfoot; 2014; Neely, 2008).

Accordingly, we can identify different forward distribution typologies that reflect different levels of interdependency and tasks in relation to the complexity of the manufactured product. These activities range from standard products sold in spot markets, to complex distribution where highly differentiated products are developed to satisfy specific needs and build tighter relationships among end-users. To understand the different roles that distributors undertake in relation to manufacturing, the following analysis of the implied long-linked interdependencies adopts two distribution types assigned to the bridging role between manufacturing and the needs in the downstream product markets (Bering, 2020). The analysis does not include simple spot market types as they do not entail any sequential, pooled, or reciprocal interdependencies along the value chain (Thompson, 1967). Studies of lead firms with important vertical commercial links along the global value chains (e.g., Gereffi et al., 2005, 2018; Gibbon et al., 2008) highlight different characteristics and roles of the supplying firms. The same characteristics are found among downstream distributers in their relation to manufacturing, where contracts seek to manage with consideration for different competences, resources, and incentives (Klein, 1995; Lafontaine and Raynaud, 2000).

The characteristics of the distributers' as they bridge into the final product markets depend on the complexity of these product markets, the ability to codify information related to final product complexity as well as the resources, and capabilities required to perform the distribution tasks. Product complexity relates to the specificity of product and service features, quality dimensions, in addition to the related manufacturing processes, handling of warranties, etc. Product complexity is proportionate with the degree to which the manufactured output requires additional tangible and intangible modifications, and later customer interactions like services to compete successfully in the downstream product markets for end-users. High product complexity also implies a dependency on the ability to codify and transmit information about these conditions effectively between sequential activities along the value chain (Gereffi et al., 2005, 2018).

Other authors (e.g. Baines and Lightfoot, 2013; Bustinza et al., 2015) identify three broad categories of additional services. The "base" level services make provisions for related equipment and spare parts. The "intermediate" level services provide additional inputs like help desks, training, maintenance, repair, and overhauls. The "advanced" level of services comprises of different outcome-based customer support agreements. We agree with this description of services, but adopt a primary focus on the configuration of the manufactured product the complexity of its value proposition and specification in the final market, in addition to the perceived importance of intangible product features for the end-users. This determines the extent to which the resources, capabilities, and competencies embedded in the distribution function are sufficient to undertake the sales and service transactions required. It also determines to what extent these are known by manufacturing. It also highlights the difficulty to incorporate these conditions in contractual sales agreements that specify the resource deployment and entrepreneurial effort required in distribution.

This provides the basis to distinguish between two different typologies referred to as *directional* and *complex* distribution respectively (Bering, 2020). Directional distribution refers to situations where manufacturing depends on the distribution's activities supporting its tangible products to reach the final markets. Complex distribution refers to situations where the manufactured products require specific value-adding features and services to fulfill the demands of end-users in the final market. In the following, we discuss forward distribution as a long-

linked relationship between manufacturing and distribution as a bridge to the final product market, along with its specific customer requirements.

1.1 Directional distribution

In *directional distribution*, the value carrying entity is essentially the product quality and associated brand developed in manufacturing to serve the end-users in the downstream product markets. This means that the specific activities and investments required in the distribution to reach the final product markets must cater to the codified asset specificity embedded in the manufactured products. It also means that the product complexity derived from idiosyncratic resources – like entrepreneurial effort and non-specified value adding activities inside the distribution – remains low (Baines et al., 2007; Mathieu, 2001; Tukker, 2004). In other words, manufacturing applies its own resources, competencies, and capabilities (Nooteboom, 2004; Teece, 2010) to satisfy the sequential interdependencies between the general product attractiveness and the customer needs in the downstream product markets (Thompson, 1967). This reduces the need for distributors to innovate and contribute with their own value adding activities to develop the product complexity required in the final markets. Manufacturing is responsible for developing the long-linked technology that is instrumentally and economically effective (Thompson, 1967), including the product complexity and services (Baines and Lightfoot, 2013) added by the distribution. The value-adding product features and additional services have a high degree of standardization. The product complexity must still create sufficient attractiveness among the final end-users to generate revenues that satisfy the corporate profit requirements.

With the manufactured product essentially being the corporate value-carrying object, this influences the different roles, responsibilities, and interdependencies between manufacturing and distribution. When the service activities of the distribution act as value adding product features to maintain end-user demand the setup creates both sequential and pooled interdependencies that must be aligned (Thompson, 1967). Manufacturing will use planning and standardization (ibid) based on codified information to direct and monitor both activities and investments in distribution. Conversely, distribution is forced to make investments that are geared to match the market needs when selling manufactured products are based on a high degree of asset specificity (Williamson, 1985). To incentivize these specific value-creating

investments, the distribution function should earn profits that exceed the opportunity cost of foregone external investments often referred to as "quasi-rents" (Klein, Crawford and Alchian, 1978).

The allocation of asset specific quasi-rents from investment in interdependencies between manufacturing and distribution is settled contractually between the entities; unfortunately they are thereby exposed to opportunism and related transaction costs (Arrow, 1969; Williamson, 1971, 1979, 1985). Under directional distribution, these costs may relate to the distributors not making required investments or shirking on effort, but also the manufacturer reducing provisions made available for sunk asset specific investments made by the distributors. Therefore, the contracts must ensure that attempts by the distributors to free-ride are effectively internalized (Lazear and Gibbs, 2014) since these costs reduce the profits of manufacturing. This depends on the ability to establish reliable, accurate, and low cost indicators of distributors' effort to secure the manufacturing profits (Anderson and Schmittlein, 1984; Lafontaine and Raynaud, 2000; Lazear and Gibbs, 2014). When accurate indicators of distribution performance are unavailable, other types of contracts seek to hedge against these downstream imperfections. This includes self-enforcing arrangements where the distributor may lose access to the rent sharing if efforts and investments fail to accrue in accordance with the contractual stipulations (Klein, 1995; Lafontaine and Raynaud, 2000).

The fundamental challenge of long-linked directional distribution is essentially that the competitiveness of the business model and the responsibility for distribution activities all rest with the manufacturer. The ultimate issue here is the upstream manufacturer's challenge to secure access to the downstream end-users in the final product markets. This hinges on the ability to develop and maintain a quality product that can create sufficient rents to be shared both now and in the future, thereby incentivizing the distribution activities. One challenge here could be if the manufacturer's product offering over time takes on the character of a commodity that will put pressure on prices and profits. This creates a situation where the manufacturer, to maintain contractual self-enforcement for the distribution, is forced to share earnings in excess of the distribution opportunity costs while internalizing the missed ability to generate quasi-rents. If the distributor does everything that is contractually required, but sales in the product-market are not economically viable, the downstream distributor is left with two options. Either the distributor must close business, which will restrict the manufacturer's sales, or engage in

additional value-adding activities outside the terms of the contract, which creates the basis for conflicting priorities of effort. The conditions around such value-adding activities among manufacturing and distribution as a model of cooperation are discussed in the next section.

1.2 Complex distribution

When the manufactured products no longer appear in their finished or almost finished forms, but require additional downstream value adding activities and features to suit the needs of the end-users in the final markets, this present entirely different challenges (Lightfoot et al, 2013). The distributors now generate additional value by applying their own specific resources, competence, and capabilities (Neu and Brown, 2005; Nooteboom, 2004; Teece, 2010) to cater to product markets they know. In this mediating and intensive technology (Thompson, 1967), the distributors assume a role in the value-chain where they no longer just bridge the manufacturer's products to the final users, but undertake an important interdependent value-adding role.

This presents new challenges to both the manufacturer and distributors. Although the manufacturer's product remains an integral part of the product complexity and total offering, the mediating distribution technology requires specific knowledge about market conditions, and customer needs embedded in the tacit skills of the distributors. These requirements are often unknown to the manufacturer, but are necessary to preserve and enhance the attractiveness of the product offering in the downstream markets for final users. Value-adding investment activities can take many intangible forms like personal customer relations and entrepreneurial mindsets that cater to customer needs (Baines et al., 2007; Mathieu, 2001; Tukker, 2004). This is often observed around durable products that require additional services during their extended life-cycle – in the form of services that prompt recurring business interaction and purchases from satisfied customer relationships (Baines, 2015; Brickley and Dark, 1987; Kosová et. al., 2013). These kinds of value-adding activities can extend well beyond the manufacturer's core product, running in parallel with many other products and service activities that the downstream entrepreneur finds valuable to the end-users.

This dual location of specific product information and market knowledge changes the interdependencies between the manufacturer and the adjacent downstream distribution activities significantly. The manufacturer and distributors are now, to a higher extent, solving the

entrepreneurial challenge by performing and governing both independent and dependent value-adding activities supplied throughout the entire value-chain (Gereffi et al., 2005, 2018). Although authority might not be evenly distributed, the interdependencies are more reciprocal between manufacturing and distribution due to the mutual dependence on resources, capabilities, and proper incentives (Thompson, 1967). The ability to use specific product information and market knowledge residing in the distribution function is now critical to create an economically efficient instrumental technology. The coordination of interdependencies between manufacturing and distribution along the value chain is based on mutual adaptation of sequential and parallel interactive activities (ibid).

Complex distribution creates different contractual challenges between manufacturing and distribution. The ability to specify tangible investments related to product complexity poses less of a challenge for the manufacturer, whereas the often unobservable value adding actions undertaken by downstream partners presents different contractual challenges. Often this tacit market-related knowledge, idiosyncratic competences, and specific resources are difficult – if not impossible – to incorporate explicitly in contracts as argued by property right theorists (Grossman and Hart, 1986; Hart and Moore, 1990). For the manufacturer, the process of drafting contracts now becomes increasingly difficult. This relates to the challenge of describing the product complexity with intangible distribution add-ons like needed entrepreneurial activities, downstream investments, and resources required to secure demand from final users. It also relates to how these intangible relations are measured and incentivized contractually when the technology link between inputs and outputs is not as clear-cut as in the case of directional distribution. This potentially creates additional costs from market transactions and asymmetric information (Williamson, 1971). The mutually specific investments are exposed to hold-ups and opportunistic haggling between entities to appropriate quasi-rents (Williamson, 1985) as well as moral hazards related to expected effort (Alchian and Woodward, 1988).

This ultimately leaves certain elements non-contractible and therefore contracts incomplete, thus exposing investments and incentives to transaction costs related to both opportunism (Klein et al., 1978; Williamson, 1979) and moral hazard issues (Anderson and Schmittlein, 1984; Brickley and Dark, 1987). This relates to the distributors' contribution of effort, time, intangible investment, and use of tacit knowledge – as well as their share of revenues and profits – that are difficult to meter, and as a result, provide inaccurate indicators to the manufacturer. Therefore

incentive structures must be in place to ensure that the distributors invest and engage their specific resources and capabilities as residual claimant to their own assets and entrepreneurial activities generating future returns (Brickley and Dark, 1987; Grossman and Hart, 1986; Holmström and Tirole, 1991; Lafontaine and Raynaud, 2000; Woodruff, 2002).

This increasing responsibility of distribution also affects the manufacturer's authority and ability to prioritize investments and commitment of effort in distribution. The manufacturer is no longer able to exercise the same contractually based controls over investments made by downstream partners. With both manufacturing and distribution being residual claimants on their own actions, it potentially creates conflicts of interests in the prioritization between independent and (mutually) dependent activities (Simon, 1951; Williamson, 1975). Hence, the interest to serve own asset investment and optimize equity returns may create conflicting interests and incentives (e.g., Holmström and Milgrom, 1994; Shepard, 1993; Slade, 1996). With manufacturing's reduced authority, downstream distributors might take actions to serve their own interest without considering the effects on the manufacturer. This might not necessarily derive from opportunism or breaking of contractual terms, but may simply be caused by the inadvertent use of specific downstream information and end-user market knowledge. For further illustration please revert to Table 2 (chapter 2).

1.3 Forward integration

The presentation of the distribution typologies should clearly convey that the decision for a manufacturing firm to acquire and/or integrate distribution activities can present very demanding challenges. These are determined by the interdependencies between activities along the value-chain. The investments in resources and assets needed in manufacturing and distribution to secure the sales of products in the markets for end-users can range from simple physical locations to sophisticated combinations of high-level intangible inputs. For manufacturing firms to engage in forward integration into distribution, they need to consider the distributional differences and base the decision on sound arguments with plausible economic rationales that can balance the advantages against potential governance challenges and costs.

Different theories provide different economic rationales for integration, where some focus on economizing transaction costs and others focus on the efficiency of linked organizational

activities. When adjacent downstream distribution activities are known or represent a high degree of familiarity to the manufacturing, they can be managed using existing internal resources and capabilities. This is also the case even when product and process complexity is high as long as the activities can be codified, recorded, and monitored (e.g., Argyres, 1996; Barney, 1999; Connor and Prahalad, 1996; Demsetz, 1988).

When the resources and competences applied in directional distribution are known or similar to those possessed and applied in manufacturing, the governance of this type of forward integration should pose less of a problem with respect to the economic efficiency substituting markets with self-enforcing contracts. This is also the case when the integration provides more efficient monitoring of moral hazard issues related to distributor efforts (Anderson and Schmittelin, 1984; Anderson, 1985; Brickley and Dark, 1987; Slade, 1996). However, when manufacturing's knowledge of the downstream market conditions and customer needs are limited, it raises concerns about the codification of product, process complexities, and the ability to internalize incentives in contractual arrangements. Therefore, the implied interdependencies along the value chain must be handled in a different governance structure that goes beyond dealing with moral hazard issues (Brickley and Dark, 1978; Lafontaine and Shaw, 2005; Woodruff, 2002).

This highlights a problem: containing moral hazard issues when asset specificity (Klein et al., 1978; Williamson, 1979) and interdependencies (Thompson, 1967) make it increasingly difficult to measure and meter activities. The unique interrelationships between specific assets that are capable of earning quasi-rents (Klein et a., 1978; Williamson, 1979) but might also be vulnerable to hold-up and moral hazard costs. This depends on the ability to detect hold up and moral hazard exposures. Alchian and Woodward (1988) argue that the exposure to moral hazard depends on the "plasticity" of assets indicating the range of their discretionary use. If the use of an asset is easy to meter, it is exposed to hold-up, but not to moral hazard. In contrast, if the use of an asset is difficult to meter and therefore is highly plastic, it is vulnerable to both hold up and moral hazard (ibid). Hence, if monitoring and metering is difficult, it means that an opportunistic downstream distributor can appropriate quasi-rents without being detected when asset specificity covers for potential moral hazard costs like free-riding. It also means that the plastic assets can create sustained competitive advantage (Peteraf and Barney, 2003) when they are used to differentiate the downstream product offerings (Harrigan, 1986; Lightfoot et al.,

2013). Empirical studies (Lafontaine and Slade, 2007) suggest that forward integration, the influence of residual claimant incentives, and moral hazard depends on both the structure of asset specificity and the type of downstream distribution the firm pursues – such as directional or complex distribution. For manufacturing firms that contemplate forward integration, the adopted distribution type, and the way intangible resources interact with asset specific investments along the value chain, constitute sources of value creation as well as moral hazard costs that must be considered in the governance structure. We will now turn to this subject.

2. FORWARD INTEGRATION AND GOVERNANCE CHALLENGES

While the discussion of distribution types above highlights the role of downstream activities, it also has implications for the way the manufacturing set up of forward integration structure to capture opportunities and mitigate the costs related to interrelated transactions along the value-chain. The implied trade-offs (see Table 2, chapter 2) are not easy to uncover and managing them is equally challenging. As Williamson (1998) notes, there is a basic interplay between costs from market transactions and marginal profitability that must be taken into account when firms expanding its boundaries. Rather than considering a choice between generic governance structures, the question to be asked is whether different pre-existing strength and weaknesses are set up to organize activities internally that can support future business activities.

When firm vertical integration no longer is mundane (Williamson, 1985), but involves resources and capabilities outside the existing (Argyres, 1996; Barney, 1993, 1999; Demsetz, 1988) this affects firms' competitiveness (D'aveni and Ravenscraft, 1994; Harrigan, 1986; Neu and Brown, 2004 Suarez et al., 2013; Visnjic et al., 2016). When a manufacturing firm acquires downstream distributors or attempts to develop distribution in-house, the external market transactions and incentives are suppressed so interactions along the forward integrated value-chain must be governed in order for the product combinations remain competitive in the market. In sum, it affects the combinatory capabilities to exploit existing resources or explore and reconfigure for innovation (March, 1991; Nooteboom, 2004) and organizational dynamics like the center of gravity along the along the integrated value chain (Galbraith, 1983; Ilinitch and Zeithaml, 1995). A manufacturing firm with an established technical rationality (Thompson, 1967) therefore needs to know what capabilities and resources exist in the acquired downstream

business activities and how valuable new, and closer to final product markets they are to the competitiveness of the final product (Teece, 1982). This also means that firms needs to address important topics like delegation of responsibility and authority of the integrated resources.

Forward integration is also different from backward integration in the aspect of final revenue consolidation and the allocation of final profits. While forward integration brings along increasing possibilities to monitor performance and thereby increase efficiency (Anderson and Schmittlein, 1984; Kosova et al., 2013) it at the same time must not ignore the potential conflict between needed incentives and moral hazard of integrated resources embedded in new firm structures (Brickley and Dark, 1987; Lafontaine and Dark, 2007). To end this, we do observe manufacturing enterprises that are able to capture the benefits of forward integration while minimizing the costs of adhering to this strategy as a way to generate sustainable competitive advantage (Harrigan, 1986; Suarez et al. 2013; Visnjic et al., 2016; Wang et al., 2018).

2.1 Knowledge, delegation, structure and coordination

It is argued that only tasks that are unimportant to the manufacturer should be delegated by dispersing authority and responsibility (Aghion and Tirole, 1997). However, when the manufacturer extends the value-chain and integrates forward, management will eventually face entrepreneurial challenges to remain competitive in the final product market for the end-users. The entrepreneurial challenge of forward integration can be perceived as an “opportunity set” of technologically feasible solutions constrained by physical laws and limitations – or bounded rationality of human knowledge (Jensen and Meckling, 1990). If the human knowledge is tacit and can be linked to specific situations and contexts, it is most efficiently learned from direct exposures to these situations within the organization to be applied in other internal functions and roles. For top management in manufacturing, this means that they cannot manage all the integrated functions within the firm due to information overload and heuristic human limitations, but must eventually delegate some authority to the distribution function to remain effective (Coase, 1937; Foss and Weber, 2016).

The managerial capacity has particular relevance for the types of forward integration possessing many special interdependencies along the value-chain that must be addressed within the enterprise structure. If the integration of distribution only constitutes a marginal and

mundane extension of the value-chain based on existing manufacturing resources and competences to create customer value (Bering, 2020; Hoopes, Madsen and Walker, 2003; Williamson, 1985), it poses less of a structural and managerial challenge (Demsetz, 1988; Gereffi, et al., 2005). The reason is that the knowledge and competences then do not have to be transferred internally and therefore do not challenge the existing enterprise structure. However, if the acquired downstream resources constitute idiosyncratic or tacit knowledge, the bounded rationality of enterprise managers presents a very different challenge. By nature this type of knowledge is difficult (and costly) to codify and transfer across the enterprise (Connor and Prahalad 1996; Demsetz, 1988; Gereffi et al., 2005, 2018; Grant, 1996), so management must find alternative (and effective) ways to economically exploit these tacit resources. Jensen and Meckling (1990) argue that this can be resolved by moving knowledge to those holding the decision rights, i.e., top management, or by delegating authority and decision rights to those managers within the enterprise who have the specific knowledge. What previously was handled through effective market allocation and contracting is now managed through hierarchy and internal structures.

The choice between transferring specific knowledge, or delegating decision authority, has implications for the type of distribution structure adopted to govern interactions along the value chain, e.g., directional or complex distribution typologies. Under directional distribution, it is manufacturing that holds the capabilities, competences, and resources that constitute the essential strategic factors of the enterprise. Manufacturing remains the important source for the creation of rents and subsequent rent-sharing with downstream distribution. This means that after the forward integration, no idiosyncratic, or specific, knowledge needs to be transferred or relocated internally along the value chain. It remains upstream with manufacturing, which continues to act as the formal corporate headquarters. Under complex distribution, both manufacturing and the adjacent downstream distribution activities hold idiosyncratic resources where the consolidation of these interrelated elements are less than straightforward to entangle (Dierickx and Cool, 1989; Story et al., 2017; Thompson, 1967). Questions like whether there should be a defined location of headquarters along the value-chain, if knowledge should be transferred, or decision rights and authority be delegated, have no clear-cut answers (Gebauer et al., 2005; Neu and Brown, 2005; Kowalkowski et al., 2017; Zhang and Banerji, 2017). The choice of whether to delegate or centralize decision-making affects the internal structures and

the formal role of functions and departments within the firm (Brickley et al., 2014; Kaplan and Atkinson, 1998).

With a forward extension of activities based on the exploitation of similar, or the same, resources and competence (March, 1991; Nooteboom, 2004), these choices pose less of a problem. With directional distribution, no special or unfamiliar resources, competences, or capabilities are needed in manufacturing to manage downstream activities and therefore no transfers of knowledge related to product complexity and specific market needs are called for. The overall responsibility and authority continues to reside with upstream manufacturing based on preexisting resources and capabilities. When these integrated resources are used primarily for productive and efficiency purposes without responsibility for profits, the application of resources and competences only consider the efficient use in the integrated value-chain and thereby assumes the role of a "revenue center"[6] (Brickley et al., 2014). This structure resembles what Williamson (1975) describes as a C-form (command) organization, often found in firms with a vertical integration strategy where internal transfers of goods are mandatory (Eccles, 1985).

When new idiosyncrasies like specific market knowledge and service capabilities are integrated, but are costly to transfer, there is a call for different integrative structures. Then headquarters must economize on the idiosyncrasies by delegating responsibility and decision authority to a downstream "profit-center" (Brickley et al, 2014; Bustinza et al., 2015; Gebauer et al., 2005) that resembles the so-called M-form organization (Chandler, 1977; Eccles, 1985; Holmström and Tirole, 1991; Williamson, 1975). The manager of a profit-center is now responsible for operational efficiencies, use of resources, and investments to achieve various strategic performance and profit targets. The profit centers effectively internalize and solve the responsible managers' prioritization of resources (Holmström and Milgrom, 1991, 1994). Profit centers are especially relevant and when managers have the autonomy and authority to make decisions on external trades where the consequences are internalized in the profit center accounts (Eccles, 1985; Gebauer et al., 2005; Jacobides and Billinger, 2006; Oliva et al., 2012).

The specific type of distribution adopted, whether directional or complex, and the formal role ascribed to the downstream revenue- or profit center also determine how the managers are

[6] The cost, revenue, or profit, centers can be structured as business units, divisions or different legal entities of the same enterprise. A revenue center is the forward version of a cost center and is used when no profit targets are attached from the prioritization and use of investments and entrepreneurial effort.

exposed to the competitive effects of upstream product input, downstream market information, and the flexibility along the value chain to react to ongoing changes. To secure the instrumental and economic effectiveness of integration, there is a need to process information about environmental risk factors and synthesize it in ways that apply to the different contexts of the downstream revenue- or profit centers (Arrow, 1974; Galbraith, 1983; Thompson, 1967). In the context of forward integration, the coordination of interdependencies along the value-chain must consider the downstream function, tasks as distribution mediates between manufacturing, and the end-users in the final product markets.

Manufacturing firms must dispose of their produced outputs. Vertically integrated long-linked closed systems with mandatory transfer of goods, like C-form and directional distribution types, the technological core, or core competencies (e.g. Hammel and Prahalad, 1990; Mintzberg, 1979; Williamson, 1985) in manufacturing are used to govern resources along the value chain to secure sales of manufactured output. These closed structures aim to ensure effective operations by sealing the technological core off from external market uncertainty (Thompson, 1967). This means that manufacturing will seek to optimize its own efficiency with low volume fluctuations around simplified products and processes (Galbraith, 1983). In this structural regime, the coordination of interdependencies is achieved through product and process standardization, and operational planning (Thompson, 1967). The attempt to standardize and plan entails codified specifications related to product offerings (Lightfoot et al., 2013), as well as general policies and guidance documents, formal process descriptions, IT systems to reduce complexity, performance targets, and budgets (Gereffi et al., 2005, 2018; Simons, 1995). These coordination practices can be interpreted as internal contracts to secure output, manage operations consistently, and efficiently along the value chain. Under complex distribution this changes fundamentally. There is now a broader operating autonomy in open systems, or M-forms, where decisions about the level and quality of internal transfers are delegated to managers at the profit centers as they try to secure their own operational and economic efficiency (Bustinza, 2015; Gebauer et al., 2005; Oliva and Kallenberg, 2003). This kind of structural regime relies more on the coordination of reciprocal interdependencies through feedback processes and mutual adjustments between the profit centers (Thompson, 1967).

The formal role of business entities, or profit centers, also affects the distribution of coordinating authority. Cost centers are usually part of a profit center, which makes the

responsibility and authority in the cost center weaker since the cost center serves as an input provider of intermediary products without profit responsibility (Zimmerman, 2011). Managers of cost centers do not have authority to select outside product markets for their outputs. This means that managers of cost centers cannot decide on the product complexity like quantity, quality, and specifications – as well as the price of the intermediate product. This raises the question about how formal organizational roles vary with the adopted distribution type. If no tacit resources and capabilities are needed downstream, as in the case of directional distribution, there is no reason to allocate authority to manage product complexity. Manufacturing will therefore be reluctant to take on a formal role as cost center with distribution taking the role as profit center with incentives to cater to market developments. The reason is that this structure delegates profit responsibility to the integrated distribution function, while redistributing decision-authority away from manufacturing (Brickley et al., 2014; Eccles, 1985). This would effectively limit the coordination authority of the integrating manufacturing business.

From the analysis above we can interpret that internal structures serves to emulate either markets or hierarchies. When a forward integrated manufacturing company uses hierarchical governance from its own resources and capabilities to coordinate interdependency, the distribution takes the formal role of a revenue center. Contrary, with forward integration into complex distribution existing resources and competences are often insufficient to stay competitive in final product markets. Manufacturing therefore needs to delegate responsibility and authority to leverage downstream idiosyncratic resources become paramount to competing. Firm structures with responsibility and authority embedded inside profit centers now resembles internal markets where coordination is based on negotiations and mutual adjustments leaving knowledge along the value chain.

2.2 Pricing of intra firm transactions and incentives

It is a hard economic fact, as Klein (1995) argues, that the incentives between two sequential monopolies do not coincide. One of these misalignments is often referred to as double marginalization (Lantz, 2009; Pindyck and Rubinfeldt, 2013; Tirole; 1988), where the price of the intermediate product becomes the cost of the distributor. The challenge with two sequential profit optimizing monopolies is that the seller (manufacturer) will set the price of the

intermediate product to optimize own profits at a level that causes the profit optimizing distributors to forgo potential business (Brickely et al, 2014). In essence, the distribution will determine the end-user selling price based on the manufacturer's profit optimizing price of the intermediate products causing the manufacturer to forego volume and profits. In spot market transactions, this misalignment of quantity and profits is eliminated by lowering the price of the intermediate product – essentially transferring profits from the manufacturer to the distribution. The industrial organization literature (e.g., Eccles, 1985; Lantz, 2009; Pindyck and Rubinfeldt, 2013; Tirole, 1988) sees vertical (forward) integration as a way to avoid misalignment of sequential monopolies linked to the double marginalization challenge. By integrating sequential business activities, and excluding external markets, the enterprise becomes *one* single business center without internal incentive conflicts. This should make the alignment of marginal revenue easier.

The vertical structures found within large corporations are however, often more complicated. As is the case in many multidivisional firms with sequential business units as profit centers, the intra firm transfers often introduce pricing mechanisms that resemble market transactions. Eccles (1985) argues that transfer pricing in a vertical integration strategy is almost tautological and recommends a more holistic approach that considers department responsibility, authority, fairness, and openness to outside trade. These considerations resemble the strategic challenges associated with interdependency, trust, motivation, and rewards – as well as exposure to moral hazard (e.g., Arrow, 1974; Eccles, 1985; Kaplan and Atkinson, 1998; Holmström and Tirole, 1991).

To address the pricing challenge of internal transfers, there are different possibilities that also relate to the choice of internal structure and the formal role of business centers. The internal transfer valuation of the intermediate goods can be either at cost or market based prices with numerous variations in between, by convention often set by headquarter dictate. Valuation at cost increases the incentive of the downstream business center to purchase internally, due to low input prices and resolves the double marginalization problem (Eccles, 1985). However, setting the transfer price at cost at the same time allocates all the profits to the integrated downstream distribution center, leaving the upstream business center (manufacturing) with status of a cost center. In contrast, transfer prices valued higher than cost will effectively redistribute profits to the upstream manufacturing entity. For a manufacturing firm that integrates backward, cost

based transfers will have no implications on the formal role of the manufacturing. This is because they still remain the final point of revenue consolidation and therefore by definition assumes the formal role of the final profit center. Simultaneously, having the integrated suppliers acting as cost centers transfers profits and consolidates authority within the manufacturing profit center (Eccles, 1985). This is not the case under forward integration, which introduces different challenges. If manufacturing assumes the formal role of a cost center, this will transfer all profits to the integrated distributors. If manufacturing takes the role of a profit center and distribution a revenue center, profits and authority remain with manufacturing (Brickley et al., 2014; Eccles, 1985).

While transfer pricing can address double marginalization issues and incentive misalignment between sequential business centers, it can also provide other means of coordination by establishing the formal roles and authority of business entities. Internal structures of sequential profit centers also increase the incentive for independent business entities to grow their own profits by various mechanisms (Eccles, 1985; Kaplan and Atkinson, 1998; Williamson, 1985). Allocating profits from manufacturing to downstream distribution profit centers can expose the corporate profits to different kinds of moral hazard issues linked to the behavior of downstream agents (Anderson and Schmittlein, 1984; Brickley and Dark, 1987; Lafontaine and Slade, 2007; Lu et al., 2016; Woodruff, 2002).

When forward integration is structured as directional distribution where product complexity outside manufacturing remains relatively low, monitoring is easier and more accurate with low associated costs. Incentivizing agents in distribution can then be related directly to observable or measurable inputs and thereby minimize costs related to moral hazard (Anderson and Schmittlein, 1984; Kosová et al., 2013; Lafontaine and Slade, 2007; Lu et al., 2016). This removes the need to use profits inside the downstream distribution entities as incentives to the use of resources and capabilities. Manufacturing can then take on the formal role of a profit center and consolidate aggregated profits with distribution acting as a revenue center. This effectively places all profits inside the manufacturing profit center since upstream effort is considered most important and therefore assumes the rewards (e.g., Lafontaine, 1992; Scott, 1995; Nickerson and Silverman, 2003; Lafontaine and Shaw, 2005). However, when forward integration is structured as complex distribution, there are different challenges. The high complexity of products and transactions – and the difficulty of codifying the use of specific

plastic resources and capabilities embedded locally along the value chain (Alchian and Woodward, 1988) – makes effective monitoring difficult. The lack of observability and accurate metering of downstream distribution activities provides cover for moral hazard where agents can more easily appropriate company value (Kim et al., 2019). In this instance, implementing sequential profit centers can be seen as a way to mitigate the moral hazard risk of agents in distribution by locating the profits within manufacturing.

The choice of transfer pricing policy has other dimensions than aligning incentives related to double marginalization and moral hazard issues. Holmström and Tirole (1991) argue that we need to distinguish between "effort," which is booked and recorded in the firm's accounts and "effort," which is not formally booked in accounting terms, but accrued as personal costs carried by the individual employee or manager. Observed and accounted effort allows at minimum that invoiced expenditures are considered within cost-based transfers. This means that to incentivize the manager of an upstream cost center to take action that affect the value of the intermediate good the activity must be verifiable. This allow for the managers effort to be booked as costs and legitimately passed on through the transfer-price. If the activity is not verifiable or contractible, there is no monetary incentive for the manager to provide this personal effort as the potential benefit is booked in the adjacent profit-center (Bester and Krähmer, 2008; Grossman and Hart, 1986; Holmström and Tirole, 1991; Liberti, 2016). This creates a monetary incentive for managers of a profit center to use adjacent resources of cost or revenue centers since costs otherwise are carried personally by the manager without reaping the full benefit of effort (Grossman and Hart, 1986; Holmström and Tirole, 1991).

While transfer pricing seems less demanding under directional distribution, complex distribution highlights the challenges that follow with forward integration. This relates to the trade-off between the hedging costs of moral hazard issues, and the incentives provided to encourage personal effort and investments in future profits. The personal efforts like improving company values, living the company mission, and increasing customer value are often unobservable. If these efforts are not visible in assigned profits and are difficult to trace to the manager's personal engagement, there is little incentive for the downstream profit-center managers to prioritize these kinds of important activities (Grossman and Hart, 1986; Holmström and Tirole, 1991). This is why Kaplan and Atkinson (1998) argue that nowhere is the potential for conflict greater than from interaction when a good produced in one center is transferred to

another business center. Williamson (1985) identifies the related "accounting contrivances" as a bureaucratic cost that may lead net receipts to be exploited or squeezed.

This discussion makes it clear that the transfer pricing policy affects many aspects of the firm. The ability to coordinate through "weak incentives" imposed through use of the hierarchy (e.g., Simon, 1951; Holmström and Milgrom, 1991, 1994; Williamson, 1985) is often lauded. But, it is obvious that hard financial incentives linked to profit-center responsibility also are justified. Here the relationship between economic performance and incentives are the essential concern of the transfer pricing conundrum that often defies simple accounting solutions and forces management to intervene (Eccles, 1985). This is especially relevant when it relates to personal effort and investments (e.g., entrepreneurial engagement, implementation of values, customer orientations) that are difficult to measure, contract, and observe (Grossmans and Hart, 1986; Holmström and Tirole, 1991; Kim et al., 2019; Liberti, 2018; Lu et al., 2016). The coordination of interdependencies along the value chain therefore inevitably entails a discussion about the formal roles of the sequentially linked business centers and the transfer pricing adopted between them.

From the discussion above, it is clear that incentive misalignment continues to exist after forward integration. Manufacturing firms still need to address the valuation of the same intermediary products and the purpose this valuation serves. With directional distribution, downstream incentives can be coupled to observable indicators relating to the effort provided. Transfer pricing can therefore be used to appropriate downstream profits without affecting incentives relating to profits. With complex distribution, the incentive misalignment is intended to solve the value added by the downstream business centers' entrepreneurial effort, use of idiosyncratic resources, and capabilities – raising customers' willingness to pay more. This effort is unfortunately difficult to monitor which requires incentives that are coupled to aggregated indicators of distribution financial performance. Transfer pricing methodology must be adjusted to the purpose of the distribution.

2.3 Authority, knowledge processing and monitoring

The discussion about the formal status of business centers and the coordination of interdependencies between them is tied to the authority formally delegated to the centers, in

addition to the influences they may impose through other means. Authority is the official right to decide on the actions others must take (Simon, 1951, 1991; Williamson, 1975) and derives "from an explicit or implicit contract allocating the right to decide on specific matters to a member or group of members of the organization" (Aghion and Tirole, 1997, pp. 2). Alchian (1989), Grossman and Hart (1986) and Hart and Moore (1990) attribute authority to the property rights of tangible assets, which includes the right to decide on the use of those assets but also explicitly excludes employees' from access to use the assets. Authority and responsibility therefore also relate to the formal function of business centers within the forward integrated organization. In the case of profit-centers in a pure M-form organization (Chandler, 1977; Williamson, 1975), responsibility and authority are usually delegated to assure the investors or corporate owners a return on the invested capital from the use of internal assets and resources. Cost-centers do not have the same authority to decide on exogenous factors since they serve as an input provider of intermediary products to profit centers (Zimmerman, 2011).

When the profit centers are embedded in long-linked organizations it often gives rise to intense discussions about setting appropriate performance targets with effective valuation and cost allocation practices (Kaplan and Atkinson, 1998; Zimmerman, 2011). With sequential profit centers, the responsibility towards coordinated targets needs to be sustained by the collocation of corresponding authority inside the profit centers (Eccles, 1985). Reciprocal interdependencies between sequential profit centers are therefore aligned through mutual adjustment (Thompson, 1967) where hierarchical authority serves to exercise rewards and punishments that can be interpreted as an internal version of markets (Arrow, 1974). For an organization to survive in the long run, it must have a common and accepted locus of responsibility and authority that makes expectations among agents converge (ibid). If responsibility and authority are not collocated, and if those that have authority cannot be held responsible, it will lead to loss of self-respect that damage the performance of agents (Arrow, 1974; Aghion and Tirole, 1997).

While delegation of responsibility and authority can have a positive influence on the distribution agent's willingness to take initiatives using specific knowledge (Liberti, 2018), it can also result in a loss of control for the principal owner, e.g., the manufacturer (Aghion and Tirole, 1997; Bester and Krähmer, 2008). Authority can take the shape of formal and real authority. Formal authority is the officially delegated authority described in employment

contracts or through the ownership of assets, i.e., holding property rights. Real authority comes with increasing plasticity of assets and resources like asymmetric specialized information and knowledge, such as important product market complexities that is difficult to codify and verify. If an agent holds real authority, Aghion and Tirole (1997) argue that an owner, or holder of formal authority, will be reluctant to use the rights embedded in the formal authority. Under complex distribution, the downstream managers can use their real authority for different purposes. This relates to the choice of markets and the content of the value offering but also to influence the allocation of profit, by arguing for misaligned incentives or excusing poor performance due to aggressive competition. This is especially relevant when asymmetric information (ibid) can be used to manipulate facts and advance own agendas (Kim et al., 2019).

This reveals a need to monitor and evaluate the activities of integrated downstream distributors (Zimmerman, 2011). If upstream manufacturing integrates forward and takes the role of a cost center, authority and responsibility needed to solve the entrepreneurial challenge is transferred to the downstream distribution entities (Eccles, 1985). This means that the responsibility for coding products, processing complexity through standardization, and planning is delegated to downstream distribution. This also has consequences for the location of power to coordinate and monitor corporate activities (Eccles, 1985; Fehr et al., 2013; Kräkel, 2017; Salanick and Pfeffer, 1977). Managers in manufacturing will be left with the responsibility and authority to improve their own costs without any incentives for actions that cannot be booked as costs (Holmström and Tirole, 1991; Lafontaine and Shaw, 2005). In a directional distribution context, this will clearly challenge the manufacturing entity whose primary objective is to selling its own outputs. As a solution, the manufacturer can take on the formal role of a profit center. This preserves coordination authority to codify product complexity, use specific resources and capabilities, and monitor and control activities along the integrated value chain (Brickley et al., 2014; Gereffi et al., 2005, 2018; Thompson, 1967; Zimmerman, 2011).

Under complex distribution, the responsibility to resolve the entrepreneurial challenge associated with high product market complexity is located both up and downstream, embedding specific plastic resources and capabilities (Alchian and Woodward, 1988; Baines and Lightfoot, 2014; Lafontaine and Slade; 2007). This means that authority needs to reside inside both manufacturing and distribution to make use of resources, competences, and capabilities to solve the entrepreneurial challenge along the complete forward integrated value chain. When

integrating forward, the upstream manufacturing entity needs to accept the risk from downstream managers acting selfishly while at the same time in the best interest of the corporation (Kräkel, 2017). This is manifested to instrumental effectiveness as manufacturing needs to sell the produced outputs, as well as economic effectiveness making a profit from the combined value offerings. In substitution for spot markets, these activities must be coordinated considering possible moral hazard issues from increased difficulty observing effort and behavior.

This enforces the need to monitor and control the distribution in relation to decision-making, incentives, and performance evaluation (e.g., Alchian and Demsetz, 1972; Eccles, 1985; Holmström and Tirole, 1991; Kaplan and Atkinson, 1998; Zimmerman, 2011). The interdependencies between sequential business centers must be managed as the performance of the distribution entities affects upstream manufacturing. With an expanded value chain and increasing product complexity, manufacturing can no longer directly observe performed actions and eventually faces an information overload. The lack of direct observability requires that performance monitoring is delegated, or coded, into specific representations like *key performance indicators*. Simons (1991, 1995) argues that "diagnostic control systems" have the advantage that they satisfy the need to control targeted performance and moral hazard (Simons, 1995, pp. 81). Diagnostic control systems focus on performance indicators to provide a more simple formula to discuss performance, particularly under directional distribution where the application of non-plastic tangible assets is easier to measure. Diagnostic performance indicators are a commensuration of different influencing factors but are often an insufficient way to communicate elevated results and softer goals that are exposed to the adversity of subjective interpretations (Espeland and Sauder, 2007; Henri, 2006; Simons, 1991, 1995).

Control and monitoring do not only serve to measure performance of distribution, but also to align the use of specific resources and competence embedded in behaviors and entrepreneurial efforts. This is particularly relevant under complex distribution where the business model seeks to improve the combined corporate value offering and create competitive advantages (Lightfoot et al., 2013; Bustinza et al., 2015; Visnjic et al., 2014). This requires the implementation of other supplements, in addition to the diagnostic control systems. There soft signals and general guidelines can serve as functions of control and coordination. Simons (1995) distinguishes between three different guidance systems. First "belief systems" communicate

core values and corporate mission. Secondly, "boundary systems" specify the core business and enforce rules of the game. Thirdly "interactive control systems" encourage open dialogue and learning from uncertain conditions. These guidance systems are especially relevant when authority and responsibility are delegated as the means to control other things than pure efficiency (Henri, 2006; Liberti, 2020; Simons, 1991, 1995). These guidelines promote the agents' use of specialized capabilities and knowledge related to the plastic assets. This is important when dealing with non-contractible value-creating items like creating customer satisfaction, building reputation, heeding core values, and a corporate mission.

However, the distribution ownership matters to manufacturing as the instigator of forward integration when product sales have long-linked interdependencies with the downstream distribution activities. Diagnostic performance indicators that focus on performance tend to have a short-term focus, whereas the guidance systems are more oriented towards longer-term future value creation (Simons, 1995). A manufacturing prioritization on diagnostic control can force managers of the downstream distribution to prioritize efforts that previously were handled by contracts. This introduces a so-called "multitasking" environment (Holmström and Milgrom, 1991, 1994) where the distribution agents must prioritize between satisfying the manufacturing entity's demand for sales volume or engage in value-creating entrepreneurial efforts. Therefore, the manufacturing's emphasis on diagnostic performance indicators and weak incentives can lead to the wrong prioritization of efforts and development of resources (Henri, 2006; Liberti, 2020; Simons, 1995) if the agents' use of specific and plastic assets (Woodward and Alchian, 1988) is only thought of as a cover for moral hazard (Alchian and Demsetz, 1972; Brickley and Dark, 1987).

The emphasis on servitization to extend products with add-on services (e.g. Baines et al., 2007; 2011; Mathieu, 2001; Oliva and Kallenberg, 2003) and the struggle to make these investments profitable (Benedettini et al., 2015; Bustinza et al., 2015; Gebauer et al., 2005; Suarez et al., 2013) represents a comparable issue that is especially relevant under complex distribution. When resources and capabilities related to product complexity and value proposition resides both with manufacturing and distribution, this is where incentives can be misaligned. This can have implications for customer satisfaction and competitive advantage that can be diluted (Lightfoot et al., 2013; Nooteboom, 2004; Teece, 2010). While diagnostic control systems can be used to monitor performance and exercise control over agent behavior under

directional distribution, this proves difficult under complex distribution. When the manufacturing profit center overuse diagnostic indicators to control long-linked reciprocal interdependencies, it removes the incentive to focus on the softer long-term value creating elements – like a customer orientated culture (Gebauer et al., 2010; Henri 2006; Simons, 1995). This is exactly the focus of property rights theory (Grossman and Hart, 1986; Hart and Moore, 1990) where non-contractibility of difficult to observe effort and incentives (Holmström and Tirole, 1991) caution against. Hence, soft guidance systems take increasing importance as instruments to facilitate the control and coordination of organizational interdependencies, where initiative, idiosyncratic resources, and effort is important (Henri, 2006; Liberti, 2020; Simons, 1991, 1995).

In short, delegation of responsibility and authority seeks to lever specific resources and capabilities. This must be collocated to reach delegate targets. To achieve this, different specific organizational structures are selected. It becomes visible when coordination is based on standardization and planning performed by manufacturing with various diagnostic indicators attached for efficiency purposes. The authority to implement diagnostic indicators, like budgets and subsequent control measures, is a way for manufacturing and its managers to establish and preserve authority. It also gains the right to decide on actions of agents in other business entities along the value chain. The application of additional guidance systems can find traction within the organization if they create value for both upstream and downstream business centers, and are not overshadowed by a focus on easy to measure diagnostic performance indicators. This can entail decisions about where and how to compete in terms of product features and market segments, in addition to what resources and capabilities to engage in the business centers that lie upstream from the final market (Eccles, 1985; Teece, 1982).

2.4 Organizational dynamics and innovation

Manufacturing firms integrate both backward and forward along global value chains (Del Prete and Rungi, 2019) where the ability to innovate and stay competitive is an important strategic consideration. Whether a vertically integrated firm considers a specific internal activity to be a backward or forward value chain activity depends on the firm’s business origins, i.e., its center of gravity (Galbraith, 1983). The *center of gravity* is the original value chain activity where the

firm started, developed its capabilities, gained early success, and learned lessons. It is also from where new activities along the value chain were extended to support its growth (Galbraith, 1983). The center of gravity reveals the firm's path-dependent trajectory and its organizational culture (Teece et al., 1997) illustrating that an organization has a driving force along. The center of gravity influences how the organization processes information flows and the headquarters' requirement for control and coordination of corporate activities. The center of gravity also affects how the firm configures and develops resources, capabilities, and competences (Nooteboom, 2004; Teece, 2010).

Galbraith (1983) argues that firms with an upstream center of gravity location have several distinct observable characteristics. They are usually capital-heavy with top management dominated by engineers who made their career from the upstream operating core of the firm with the processes and practices required to operate this organizational technology (Nooteboom, 2004; Teece et al, 1997). An upstream manufacturing organization will look for predictability to achieve economic efficiency from low-cost production; this is where coordination and incentives are embedded in standardized processes and production planning (Thompson, 1967). Product innovation tends to be driven from the technical capabilities residing among engineers inside the upstream manufacturing with low receptiveness to market driven requirements in the forward part of the organization (Galbraith, 1983). A center of gravity located forward and closer to the final markets where the firm has integrated backward into manufacturing makes it easier to consider downstream inputs from the final product markets (Galbraith, 1983; Teece, 1982). Hence, when manufacturing firms integrate forward, it is important to recognize how the center of gravity influences the coordination of interdependencies between sequential business activities, and ultimately affects firms' competitive situation (Ilinitch and Zeithaml, 1995**)**.

When a manufacturing firm is supplied by integrated cost centers with limited knowledge about the complexity of the final product and value offering (Gereffi et al., 2005, 2018; Lightfoot et al., 2013), the central role of the manufacturing center of gravity is not challenged. The final product market in the chain of business activities essentially remains the same. When a manufacturing firm integrates forward into distribution, it assumes that value from entrepreneurial activities is created in the manufacturing business, which further cements the central role of the center of gravity. Forward integration under directional distribution does not fundamentally change the manufacturer's business model and subsequent value offering (Teece,

2010; Visnjic et al. 2016). The primary goal of integrated distribution functions is to support and seal off the instrumental and economic efficiencies from outside market influences by ensuring the sales flow (Thompson, 1967). This is done by delegating clear targets, process descriptions, and investment requirements that can be observed and measured to monitor agent effort. It will also minimize moral hazard (Anderson and Schmittlein, 1984; Lafontaine and Slade, 2007).

However, maintaining the efficiency of an upstream manufacturing center of gravity also carries inertia in the engagement of human resources along the value chain. Resources outside the manufacturing profit center – located inside the distribution functions – will then not be engaged in innovation and open learning between the distribution and manufacturing activities. Human resources in directional distribution are essentially hired for exploitation (March, 1991; Nooteboom, 2004) to achieve codified measurable targets set by the upstream center of gravity. This will make the distribution functions very push oriented with a focus on achieving measurable results like sales volume, market share, revenues, and process efficiencies measured by diagnostic control systems. Hiring employees with competences confined to elevate process efficiencies does not encourage organizational learning, nor the ability to deal with product market complexity. It does little to challenge the inertia of the center of gravity (Bustinza et al., 2014; Lightfoot et al., 2013; Teece, 2010; Visnjic et al., 2016). The preservation of an upstream manufacturing center of gravity is reinforced when the business center takes on the formal role of a profit center, which allows it to use both formal and real authority to direct downstream activities and extract profits.

In contrast, a downstream center of gravity around distribution is focused on market segmentation and product innovation through an understanding of end-user needs. This is where prices are set in accordance with the perceived customer value (Baines and Lightfoot, 2014; Galbraith, 1983). The higher reliance on specialized knowledge that is embedded in downstream human resources has implications for the ability to deal with the complexity of the product market offerings (Galbraith, 1983; Gebauer et al., 2005; Oliva and Kallenberg, 2003; Story et al., 2017). Under complex distribution, the center of gravity location presents different challenges to integrate the business activities along the value chain. Hence, an upstream center of gravity in a complex distribution environment essentially places the existing capabilities and resources further away from the dynamic product markets (Teece, 1982). This closed efficiency oriented manufacturing system is challenged, because competitiveness in dynamic product

markets relies on the joint efforts from human resources in both the upstream and downstream business centers.

Under complex distribution, coordination of interdependencies between manufacturing and distribution is particular challenging for a manufacturing center of gravity, when it entails both tangible product features and intangible business model innovation (Baines and Lightfoot, 2014; Bustinza et al., 2015; Gebauer et al., 2010; Teece, 2010). Coordination is here pursued through standardization and planning by the upstream manufacturing center of gravity center and will eventually dilute the competitiveness of the final products. This is because the upstream manufacturer does not have the tacit and specific knowledge about the downstream product complexity, and dynamic market changes under complex distribution. Even if the integrated forward distribution center has the status as a profit center, it faces the risk of being turned into a pseudo profit center if authority is maintained by an upstream manufacturing center of gravity. Delegating authority is therefore needed from the center of gravity to accommodate an ability to respond to exogenous changes in forward markets. This will require structural changes that move authority to the distribution functions where the market knowledge is located (March, 1991; Nooteboom, 2004; Teece, 2010), thereby relocating or balancing the power of the manufacturing towards the distribution.

Manufacturing firms that acknowledge the importance of efforts in the downstream distribution centers may install administrative processes to facilitate coordination, imposing measures that incentivize engagement in value-creating initiatives. If distribution was organized as an independent legal entity before being acquired by a manufacturing firm, the market-related capabilities and knowledge (e.g., Peteraf and Barney, 2003; Grant, 1996; Kogut and Zander, 1992) would be prioritized and applied in entrepreneurial efforts to stay competitive. After the acquisition, the integrated company can use this knowledge for organizational learning in innovative initiatives that span across the vertically linked business activities to refine, upgrade, and invent technologies (Levinthal and March, 1981). Exploring for new knowledge (March, 1991) adds to the ‘know-how’ repertoire and can generate interactive capabilities (Nooteboom, 2004) between manufacturing and distribution (Lightfoot et al., 2013). This allows specific knowledge and capabilities to enrich the conventional center of gravity location to focus on innovative exploration for new product offerings with value-adding services (Kogut and Zander, 1992; Baines and Lightfoot, 2013).

From the analysis above we learn the way an integrated firm perceives activities depends on the location of its organizational center of gravity. The early lessons learned influence path-dependency and what activities the integrated firm finds important for continued success – its priority investments along the value chain. It also influences the diversity of resources and capabilities along the value chain and for what purpose they are deployed. An upstream center of gravity will prioritize value adding activities departing inside the manufacturing; one that is usually capital heavy and use the distribution to achieve upstream goals. A downstream center of gravity is receptive to changes in final user market and will use information to influence manufacturing flexibility and product development. This also influence who has the authority to define governance systems, and for what purpose interdependency is coordinated. The ability for integrated firms to balance its center of gravity in response to exogenous changes in the product markets for end-users is important to stay competitive.

3. DISCUSSION

Manufacturers that practice forward integration into distribution and focus on advanced value adding activities to expand revenues from differentiated product offerings, enhanced value propositions, and closer customer relationships that gain strategic advantage has received much attention. However, despite the immediate appeal of these propositions, the empirical evidence reveals that the manufacturers often struggle to turn the strategic decision to integrate forward into sustainable profits. Similarly, the movement towards servitization has found it paradoxical that the value-adding services often fail to generate the promised profit (e.g., Benedettini et al., 2015; Gebauer et al., 2005; Suarez et al., 2013; Visnjic et al., 2014). In short, is not easy to expand a prevailing business focus into new adjacent territory, even when it relates to extended product-service offerings. The strategy literature typically adopts economic rationales to determine the optimal firm boundaries, but often finds itself in conflicting territory where one set of theories argues for integration and another does not (Bering, 2020; Brettel et al., 2010; Lafontaine and Slade, 2007; Gibbons, 2005; Woodruff, 2002). The way this potential conflict is resolved depends on the role distribution plays in relation to the manufactured products offered to the market, i.e., the extent to which complex product offerings must accommodate dynamic market demands to stay competitive. Since most contemporary product markets seem to move towards increased complexity and dynamic change, this presents a universal problem with no

obvious solution. Yet, real business managers must deal with reality and try to manage this problem. While some have a hard time, others have found viable solutions despite the wanting prescriptive advice from academia. To understand the underlying governance challenges associated with forward integration from manufacturing into downstream distribution, the preceding sections have analyzed these challenges in the context of two different distribution types – directional and complex distribution.

We note that part of the disorientation may relate to often overlooked, but important, differences between backward and forward integration, along with their impact on the ability to manage interdependencies along the value chain. When manufacturing integrates backward, or suppliers integrate forward, the manufacturing center retains status and power as the last revenue collecting profit center in the value chain. However, when manufacturing integrates forward, the final revenue and profits are (now) recorded in the distribution business outside of the acquiring manufacturing center, which can dilute its status and power but also amplify moral hazard. Since manufacturing typically is the economic turning point in long-linked value-chains, this can have profound effects on the dynamics that coordinate interdependencies. It also influences how important resources and capabilities are incentivized and engaged to create a competitive advantage from integrating forward. When product markets are complex and dynamic, there is a need to engage specific distribution capabilities and knowledge in entrepreneurial efforts that generate new viable market offerings (Bustinza et al., 2015; Oliva and Kallenberg, 2003). However, this might be at odds with a governance structure that has power tilted toward manufacturing because it is not straightforward to resolve the reward structure between adjacent business entities to avoid the potential for incentive misalignment.

Double marginalization is a root to such incentive misalignment. For a manufacturing firm this requires a redistribution of profits to the distribution to reduce the difference in downstream profit maximizing volume between two sequential monopolies (Brickley et al., 2014; Riordan, 2008). This redistribution of profits can serve to engage entrepreneurial effort in distribution that otherwise would receive no incentive. By the same token, if engagement of entrepreneurial resources and capabilities is needed, but difficult to measure, the forward allocation of profits can give rise to moral hazard issues (e.g., Anderson, 1985; Anderson and Schmittlein, 1984; Baker and Hubbard, 2004; Brickely and Dark, 1987; Shepard, 1993; Slade, 1996; Woodruff, 2002; Lafontiane and Slade, 2007). Disentangling the incentive misalignment from double

marginalization of two sequential monopolies (Eccles, 1985; Klein, 1995; Riordan, 2008; Tirole, 1988) and related moral hazard (Lafontaine and Slade, 2007) can still entail important challenges. When manufacturing integrates forward into distribution and services, the direct contact to end-users in the final product markets is held with the acquired downstream distribution centers. The manufacturer's dependency (Thompson, 1967) on distribution and its ability to exploit the proximity to end-user markets is exponential when complexity increases, herby amplifying the need to adapt to the changing needs of different end-users (Baines and Lightfoot, 2013; Woodruff, 2002).

Under directional distribution, the handling of product complexity originates from resources and capabilities inside the upstream manufacturing center (Galbraith, 1983; Nooteboom, 2004). The contractual relations between manufacturing and distribution is based on self-enforcement (Klein, 1995; Lafontaine and Raynaud, 2000) where the distributors have access to a provision when specific asset investments are used as requested. The distributors' effort and activities are linked to defined tangible investments, made so that the manufactured products are effectively sold and distributed. The basis for this governance structure is entirely based on the competitiveness of the manufacturer's products with the related investments and standardized activities that create rents, and allow the provision to be created and shared with distribution (Klein, 1995). This provision also secures that the distributors' investment in specific tangible assets with limited plasticity to accomplish the sales task. The planning and standardization of the distribution processes increases efficiency and reduces the element of moral hazard.

However, is not always easy for the manufacturer to detect incentive misalignment. This can amplify the double marginalization problem and thereby incentive misalignment. First, the distributors can cut back on effort to sell output to the point where the provision paid by the manufacturer equals that of the manufacturer's opportunity costs. This means that the manufacturer pays a provision without receiving any benefit, a kind of opportunism often attributed to moral hazard. Other misalignments may relate to incremental or excessive costs incurred by the distributors by their own choice. These costs can reflect value-creating effort to accommodate customers while other costs might reflect value-reducing perks like expensing a luxury car or just high salaries. These costs inside distribution require adjustments to the contracted provisions so they effectively capture the effects on sales volume and profits (Klein, 1995; Lafontiane and Raynaud, 2000).

To reap the economic benefits from integration, the sharing of rents comprised in the provision paid to the distributors must be reduced, or even eliminate the potential misalignment of incentives. The rationale for integration and improved monitoring is to reduce moral hazard and internal costs and thereby increase the sales volume of distribution (Anderson, 1985; Anderson and Schmittlein, 1984; Brickley and Dark, 1987). Since directional distribution requires little to no entrepreneurial effort based on intangible downstream resources and specific assets, manufacturing aims to exploit and control distribution activities by contractual provisions. This requires the ability to efficiently measure process and target fulfillment, defined by assigned diagnostic control systems (Lazear and Gibbs, 2014; Simons, 1995). In this governance structure, the manufacturer can improve incentive alignment and reduce exposure to moral hazard.

This means that authority must be consolidated in the upstream manufacturing business center, taking on the formal role as a profit center consolidating formal property rights (Aghion and Tirole, 1997; Eccles, 1985; Grossman and Hart, 1986). Consolidating authority with manufacturing has the advantage that the manufacturing headquarters, or center of gravity, can coordinate interdependencies through planning and standardization without interventions from the distribution (Williamson, 1975; Thompson, 1967). Since directional distribution provides reasonable measuring of activities related to output and costs in the distribution, the need to incentivize entrepreneurial effort related to unobservable or non-contractible activities is limited (Holmström and Tirole, 1991). The manufacturer can therefore use instruments like transfer pricing policy to minimize the exposure to downstream moral hazard. This occurs by transferring profits from distribution revenues to the manufacturing profit center. A manufacturing firm operating under directional distribution in an environment where the demands of distribution is relatively stable does not challenge the conventional governance approach (Bustinza et al., 2015; Teece, 2010; Visnjic et al., 2016) or require authority be moved further downstream (Galbraith, 1983; Nooteboom, 2004; Thompson, 1967).

Under complex distribution the responsibility to configure the product complexity in dynamic competitive markets resides both with the manufacturing and distribution entities. This means that the sharing of rents does not rely only on the value created by the manufacturer as a downstream quality supply, but on a more refined final product complexity derived through combined expertise and effort along the long-linked value chain. This has governance

implications for manufacturing firms that integrate forward. The alignment of incentives, innovation, and coordination of interdependencies in the long-linked value chain must fundamentally change.

With segregated ownership and exchange in spot markets, the contracts between specialized firms are designed to reward the residual claimants for their entrepreneurial efforts. The purpose of this contracting is to reduce incentive misalignment between the manufacturer and distribution as individual firms (Lafontaine and Raynaud, 2000). With forward integration from a manufacturing firm into distribution, the incentives related to entrepreneurial effort and refined product configuration needs to be preserved (Bustinza et al., 2015; Baines and Lightfoot, 2014; Gebauer et al, 2005). Several elements are noteworthy here. First, the contractually required investments by the distributors do not only favor manufacturing, but also the distributors' ability to generate profit from their own effort. This is supposed to be reflected in the distributors' investment incentives. Secondly, the distributors should remain the residual claimants to the use of their idiosyncratic investments and efforts so the generated quasi-rents are not appropriated by an opportunistic manufacturing center (Grossman and Hart, 1986; Gibbons, 2005; 2010; Woodruff, 2002). This includes the use of specific market knowledge that often is tacit in nature and embedded in customer relationships that can ensure end-user satisfaction and loyalty for future business engagements. Effectively these product complexities and related elements are a tool to differentiate and tailor products to specific use with the aim to increase the customers' willingness to pay more (Hoopes et al., 2003). They are considered value-adding distribution artifacts that are needed to reach profit optimizing sales quantities.

Forward integration under complex distribution therefore needs to reconfigure the governance structure of the integrated enterprise (Bustina et al., 2015; Gebauer et al., 2010; Suarez et al., 2015; Teece, 2010; Visnjic et al., 2014). There is a need to impose incentives that preserve the positive effects of segregated asset ownership according to boundary theories (e.g., Anderson and Schmittlein, 1984; Brickley and Dark, 1987; Kosová et al., 2013; Lafontaine and Slade, 2007; Nickerson and Silverman, 2003; Shepard, 1993; Woodruff, 2002). Under complex distribution, the plasticity of the distribution resources is high, which exposes manufacturing to distributors' opportunism (Alchian and Woodward, 1988; Gibbons, 2005, 2010). The distributors' use of asymmetric market information allows them to haggle over quasi-rents inside manufacturing when verification is difficult and measurement costs are high. A higher

level of asset plasticity makes it even more difficult for manufacturing to ascertain the structure of costs inside the distribution activities, and accurately meter the relations between input and output. The essential question here is whether the costs inside distribution are an accurate indicator for unproductive 'laziness,' or if they constitute incremental costs with future returns from entrepreneurial investments in warranted product complexity. The distributors will refrain from engaging in these investments and activities if the future profits from these interdependencies with manufacturing can be appropriated – often because they are difficult to observe, measure, and contract (Grossman and Hart, 1986; Hart and Moore, 1990). Separating these costs can often prove difficult when they are embedded in human factors and entrepreneurial initiatives (Lafontaine and Slade, 2007).

When manufacturing integrates forward, it leaves the governance question open to the difficulty of separating the nature of costs of interdependent activities along the value chain. The issues are obvious. Leaving integrated managers without incentives to contribute with their unique capabilities increases the risk of costs from moral hazard (Alchian and Demsetz, 1972). Interpreting distributors' unobservable and difficult to monitor effort as being unproductive and attributing this to moral hazard while other and more easy to meter, are being incentivized and rewarded, increases the risk wrong prioritizations. This essentially pinpoints the multitasking issue, which can be resolved and internalized if the distributors become residual claimants to these prioritized efforts (Baker and Hubbard, 2004; Brickley and Dark, 1987; Shepard, 1993; Slade, 1996). This also illustrates the challenge to convert an ex post directional distribution model to a complex distribution. The transformation from a governance regime, where all value-adding activities are monitored and incentivized by the manufacturing center, to a more customer orientated operation exploring specialized knowledge and resources in the downstream market can prove difficult (Gebauer et al., 2005; Grossman and Hart, 1986; Oliva and Kallenberg, 2003; Woodruff, 2002). The governance structure of an integrated complex distribution setting therefore needs to consider the proper reward of interacting agents in the internal coordination mechanisms, control processes, and incentive systems.

To ensure that the idiosyncratic specialized resources and capabilities of the integrated distribution continue to add value to manufacturing, it requires that these resources still can find their proper utility. Hence, responsibility and authority is delegated to the respective profit centers to ensure that value is ascribed to the use of the specialized resources and capabilities

within the business unit. Having distribution take on the formal role as profit center can provide this advantage (Brickley, et al., 2014; Holmström and Tirole, 1991). It means that the resources of agents in the distribution functions are deployed to create value by responding to the prevailing market conditions as much as possible, despite mandatory internal transfers. With manufacturing also taking formal status as a profit center, this effectively consolidates profits inside both manufacturing and distribution (Eccles, 1985; Holmström and Tirole, 1991). For the profit centers to function effectively – that is to internalize the incentives – they must operate with an accounting system that records the profits and losses generated within each center from the use of their own deployed assets and liabilities, as resources available for sequential business activities (Baines and Lightfoot, 2014; Brickley, et al., 2014; Holmström and Tirole, 1991).

To establish credible profit and loss statements upon which managers in the profit centers can be fairly evaluated, and where the information revealed is not taking advantage of by headquarter controllers and owners, the valuation of intermediate product transfers must be based on true and fair value-creating incentives (Eccles, 1985; Bester and Krähmer, 2008). This means that the transfer prices on intermediate goods are not used to transfer profits away from the buying business center to avoid moral hazard; they are rather used to incentivize and reward both observable and non-observable effort of sequential business activities along the value chain (Holmström and Tirole, 1991). However, establishing credible incentives goes beyond proper transfer pricing policies. The coordination of interdependent activities must not be based on a manufacturing center of gravity using acquired property rights to appropriate internal profit opportunities (Alchian, 1989; Gibbons, 2010; Grossman and Hart, 1986) and seal off its technological core to satisfy its desire for efficiency (Thompson, 1967). This includes the use of standardized practices and planning with authoritative delegation of budget targets to coordinate interdependencies. The proper coordination mechanisms must be based on the principles of mutual adaptation (ibid). This also comprises of innovative efforts to enhance offerings to the final product markets, and efficiency improvements in the manufacturing processes (Nooteboom, 2004). Sequential profit centers with reciprocal interdependencies are more effective in dealing with product complexities than if one single center takes the formal role of profit center (Eccles, 1985). This will also balance a pure manufacturing center of gravity to incorporate the distinctive contributions from distribution to embrace dynamic variations in demand in the final product markets (Galbraith, 1983). The manufacturing headquarters, or center of gravity, must become detached from the legacy of its organizational technology to

consider the value offering of the integrated enterprise as a new perspective of unbiased forbearance between the sequential business activities (Baines and Lightfoot; 2014; Gebauer et al., 2010; Williamson, 1985).

When an integrated firm operates in a complex distribution setting, this also creates asymmetric information between the sequential business centers. Just as contractual exchanges in markets can be imperfect and exposed to opportunities that create transaction costs, so can internal markets guided by hierarchy (Gibbons, 2010; Rosen, 1991). The delegation of responsibility and authority in a corporate decision structure can also be abused, and therefore activities need proper incentives and controls (Aghion and Tirole, 1997; Bester and Krähmer, 2008). The monitoring of performance under complex distribution must be able to take intangible inputs into account. While moral hazard still needs to be monitored in diagnostic control systems, other systems of control need to accompany this (Simons, 1995). Using purely diagnostic controls focused on elements that can be measured will force managers faced with multitasking to focus on tasks that can be measured, as opposed to those that cannot (Holmström and Milgom, 1991, 1994) – even if they are important. Complex distribution is particularly vulnerable to excessive diagnostic measuring since value often is created from difficult to observe idiosyncratic resource deployment. The incentives for managers in the profit centers must therefore take more aggregated measures that consider own (and joint) current (and future) performance into account. This also implies that headquarters establish softer guidance systems that force managers on the corporate mission, core values, organizational beliefs including encouragement to engage in interactive collaboration, and open dialogue (Simon, 1991; Simons, 1991, 1995).

4. CONCLUSION

Forward integration from manufacturing into distribution is a classical and still current expansive corporate strategy. The recent focus on servitization to extend enterprise growth can be seen as a result to this. In either case, the ability to turn forward expansion from manufacturing towards sales and distribution can prove very challenging, rarely rewarded by high profits. This article has discussed the particularities of forward integration and analyzed the conditions around different types of distribution that bridge the manufacturing of products with

the needs of end-users located downstream in the final product markets. The different distribution types are characterized by the product complexity in the final markets and the need to engage specific distribution resources, capabilities, and competencies to accommodate the market needs and configure suitable product offerings. The role of distribution, in addition to the value-adding activities it undertakes, present different governance challenges and needs for contractually aligned incentives. For an acquiring manufacturing firm, the interdependencies with distributors expose the integrated enterprise to different kinds of transaction costs and misaligned incentives that need to be contained by the subsequent governance structure.

In a directional distribution context where product markets are less complex, the governance structure can place responsibility and authority to manage, monitor, and control the product complexity inside manufacturing as a formal profit center. This is accomplished by institutionalizing controls through planning and standardization and by using incentive systems that secure the sales of manufactured outputs and the quality of which is the core of the business. It is the aim to align incentives so potential costs related to moral hazard are minimized, and manufacturing can ensure economies of scale.

In a complex distribution context where product markets are more complex, the governance of forward integration presents completely different challenges. The distribution functions now possess specific resources, capabilities, and competences that are essential to manage the product complexity and add value in the final markets for end-users. The integrated firm still attempts to minimize moral hazard, but must simultaneously incentivize the entrepreneurial effort of the distributors and engage their value adding intangible resources. It requires a fundamentally different governance structure that rewards the effort of sequential business entities, e.g., manufacturing and distribution, with incentives that partially recreate external market effects internally. This goes well beyond complementary control leavers like installment of planning, budgeting, and diagnostic monitoring but needs to consider corporate belief systems and interactive management approaches.

The analytically derived governance approach for dealing with a complex distribution context is accentuated by the product markets generally becoming more dynamic and complex, making the approach of increasing relevance. A manufacturing firm that initially integrated

forward under directional distribution, and implemented a governance structure applied to this context, might be under mounting pressure to adapt this approach as market conditions become more dynamic and complex. It is difficult to change an organization and evidence based on the performance of forward integration from manufacturing firms into servitization supports this claim. It is hard to turn these strategies into profitable business propositions.

Forward integration is challenged by the need to coordinate potentially important interdependencies in a long-linked technology where specific business activities are connected in sequential functions. Servitization attempts to integrate joint product-service packages where manufacturing and service delivery constitute conjoint functions. However, the challenges of these strategies have resemblances. Forward integration must be able to engage specific distribution capabilities needed to accommodate the complex market conditions that require specialized product features and service extensions. Firms that are unable to respond to those market needs will fare poorly, whereas a firm that can adopt a complex distribution model will fare better and outperform its peers. A successful forward integration strategy needs the ability to acquire and deploy required service-specific resources, in addition to supporting them in a proper organization structure. In either case, some of the critical success factors include two things: a decentralized structure with distributed profit-and-loss responsibilities, and an organizational culture conducive to symbiotic collaboration between manufacturing and distribution services.

We have identified the theoretical shortcomings of an economics inspired theory of the firm perspectives as guides for proper governance structures to deal with forward integration from manufacturing towards sales and distribution. The related economic theories have not advanced much over the past decade, and the corporate strategy literature no longer focuses particularly on forward integration concerns. Nevertheless, the governance of forward integration remains a real issue observed in practice among large contemporary manufacturing firms. The more recent literature on servitization pinpoints the importance of developing unique value-adding downstream services and observes comparable governance challenges to turn these efforts into profits. This highlights the fact that while some fields of study have resigned the pursuit of effective governance solutions to forward integration, the managers in important manufacturing industries continue to make decisions where some of them seem to succeed while others do not.

A promising line of future research could detail case-based analyses of both successful and struggling integrated manufacturing firms. Determining the governance elements of successful integrated manufacturing firms can help establish the frame for better solutions. Conversely, understanding the mechanics of failure can help managers avoid moves in that direction. These types of empirical studies can use the distribution typologies and their theoretical foundations developed in this article as a backdrop to support future research with a potential to create new valuable insights.

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CHAPTER 4:

FORWARD INTEGRATION FROM MANUFACTURING TO SALES AND DISTRIBUTION: A CASE-BASED STUDY

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ABSTRACT

The decision to internalize vertical business activities along the value chain is the topic of a voluminous economic literature considering the dynamic requirements of end-users, and the complexity of incentives to engage human resources and capabilities. The guiding economic rationales for defining firm boundaries emphasize economic efficiencies, economies of scale, minimizing transaction costs, and containment of potential moral hazards through appropriate contractual arrangements. Empirical studies confirm many of the theoretical rationales but also present contradictions and tradeoffs that challenge the practical governance of vertically integrated business activities. These challenges prevail under contemporary market turbulence that calls for effective incentives to engage entrepreneurial resources and specific market intelligence, while monitoring is very difficult and costly. In this context, this study provides deeper insight into the governance requirements of modern forward integrated manufacturing firms. The detailed case study of a representative company in the European automotive manufacturing industry provides first-hand information about the governance challenges of forward integration and their consequences. The study shows how internal corporate structures and incentive systems affect the tradeoffs between economic efficiencies and adaptive capabilities – all under changing international market conditions. The analysis demonstrates that efforts to enhance economic efficiencies and reduce moral hazard costs, without considering structures and incentives that engage specialized downstream competences, can be costly. These findings provide needed nuance to our understanding of effective integrative management approaches in dynamic complex markets where the value-adding activities close to the end-users are paramount for corporate performance.

Key words: corporate strategy, competitiveness, coordination, forward integration, incentives, innovation, authority.

INTRODUCTION

Over the past thirty years, traditional manufacturers of capital goods have faced increasing competition from low cost production and commodification imposed by increasing globalization (Spring and Araujo, 2013; Wu et al., 2005). The scholarly advice to deal with this empirical trend has been to integrate forward from manufacturing along the value chain into distribution, including sales and other value adding services (Harrigan, 1986; Baines, 2015; Neely, 2008; Wise and Baumgartner, 1999). The premise for this advice is indeed convincing. With the service sectors growing in the global economy and making up more than 70% of gross value added within the EU (EU Commission, 2017), intangible services generate significantly more value than traditional manufacturing (Rungi and Del Prete, 2018). Various cases of global manufacturing firms, e.g., ABB, Apple, Alstrom, Catarpillar, MAN, Rolls-Royce Aerospace, Xerox (Baines et al., 2011; Baines, 2015) are used to exemplify companies that successfully integrate downstream activities to deliver enhanced customer value. Yet, where forward integration should increase profits, it is paradoxical that many manufacturing firms struggle to turn the proposed strategic advantages of forward integration into improved business performance (Benedettini, et al., 2015; Gebauer et al., 2005; Harrigan, 1986; Visnjic et al., 2013, Visnjic et al., 2016). For example, a quick glance at the annual reports of MAN, a prominent constituent in the group of the allegedly successfully integrated manufacturing firms, reveals that the company has been unable to outperform its industry peers and turn the decision to integrate forward into a competitive advantage. In other words, there is a noticeable discrepancy between the general beliefs about the benefits of forward integration and the outcomes observed in reality, which deserves further examination.

The literature on forward integration to advance value adding downstream market activities point to product differentiation, better product-service configurations, improved customer relationships, etc. as factors that will enhance firms' competitive advantage (Lightfoot et al., 2013). Important studies on manufacturers' integration of downstream value adding activities (e.g., Baines and Lightfoot, 2014; Bustinza et al., 2015; Gebauer et al., 2005; Oliva and Kallenberg, 2003) all point to dedicated functions with specialized knowledge that arguably create superior customer value. They also note the importance of measurable performance indicators when decentralized business units operate as profit centers (Gebauer et al., 2005; Oliva and Kallenberg, 2003). However, when large investments are committed in production and R&D, as often is the case in traditional manufacturing firms (Galbraith, 1983; Tukker,

2005), new challenging interdependencies emerge along the value chain (Thompson, 1967). For a manufacturing firm this presents a radical change in the adopted business model (Gebauer et al., 2010; Kindström and Kowalkowski, 2015; Teece, 2010) because the downstream value adding activities previously operated by independent distributors now are integrated. Successful integration then assumes that the new corporate hierarchy is more effective than the prior contractual market transactions it replaces. Still, this might not always be the case.

Successful integration assumes that important value-adding activities along the value chain are (more) effective and efficient when performed under common asset ownership. This relates to the question of optimal firm boundaries as a main concern in corporate strategy. Empirical studies on firm boundaries point to a variety of economic efficiency factors that influence the integration decision (e.g., Bain, 1959; Barney, 1999; Connor, 1991; Demsetz, 1988; Grant, 1996; Nelson and Winter, 1982; Tirole, 1988; Wernerfeldt, 1984). Other studies focus on minimizing transaction costs managed through contractual arrangements (e.g., Alchian, and Demsetz, 1972; Coase, 1937; Holmstrom and Milgrom, 1991; Grossman and Hart, 1986; Klein, Crawford and Alchian, 1978; Williamson; 1979, 1985). However, these boundary theories generate conflicting integration arguments.

Transaction cost economics (Williamson, 1971, 1979, 1985) has often been used to reason on the firms' upstream boundaries, the make or buy questions, but ambiguity arises in the discussions about forward channel integration and the integration of a downstream sales force (Anderson and Schmittlein, 1984; Anderson, 1985; Brettel et al., 2010; Teece, 2010). The theoretical rationales to determine downstream boundaries have mostly related to internalized incentives and mitigating moral hazard (Brickley and Dark, 1987; Kalnins and Lafontaine, 2013; Lafontaine and Slade, 2007; Woodruff, 2002). Different perspectives point to specific issues that can be resolved through integration, but at the same time uncover a number of tradeoffs that make scholars argue for better consolidation of theories (e.g., Gibbons, 2010; Holmström and Milgrom, 1994; Nooteboom, 2004; Williamson, 1998). The potential for conflicting prescriptions arises when arguments for increased control (Coase, 1937; Simon, 1951; Williamson, 1975) point to forward integration, but property rights theory (Grossman and Hart, 1986; Woodruff, 2002) and moral hazard concerns (Alchian and Demsetz, 1972; Baker and Hubbard, 2004; Brickley and Dark, 1987; Kosová et al., 2013; Lafonatine and Slade, 2007) advocate segregated ownership of assets. The conflicting advice is especially pronounced when

the downstream activities depend on idiosyncratic resources and capabilities to generate value (Kosová et al., 2013; Lafontaine and Slade, 2007; Lightfoot et al., 2013; Woodruff, 2002). Hence, the governance of forward integration in manufacturing firms that incorporate more complex downstream markets with related activities presents new intangible dependencies that are difficult to manage effectively (Baines, 2015; Oliva and Kallenberg, 2003; Story et al., 2017).

This illustrates, that while it is possible to create competitive advantage from forward integration in ways that cater to the importance of downstream value adding efforts, it also introduces new internal coordination challenges (e.g., Gibbons, 2010; Grossman and Hart, 1986; Kosová et al., 2013; Lafontaine and Slade, 2007; Rosen, 1991). The various tradeoffs created by a forward integration strategy requires a more complete understanding of long-linked interdependencies, decision structures, and incentive systems – along with their effects on the ability to add value from all the value chain activities. The advantages of an integrated organization should derive from properly coordinated vertical business activities that improve the competitiveness of the final products, reduce production and administrative costs along the value chain (Arrow, 1974; Chandler, 1977; Coase, 1937; D'Aveni and Ravenscraft, 1994; Williamson, 1971, 1975) with aligned incentives (Eccles, 1985; Holmtröm and Milgrom, 1994; Jensen and Meckling, 1976; Klein, 1995; Riordan 2008). Nonetheless, stating this stringent rationale is easier than executing things in the context of complex and technologically advanced products that are sold to diverse professional buyers across dynamic international markets. Hence, the observed discrepancies between (potentially contradictory) theoretical prescriptions and corporate outcomes raise a highly pertinent question about how major manufacturing firms actually govern the forward integration into distribution and sales under turbulent market conditions.

Adopting a case study methodology is appropriate for such an inquiry to gain a deeper understanding of highly complex real-life conditions embraced by conflicting theoretical rationales in rapidly changing industry contexts (Welch et al., 2011; Yin, 2018). Hence, we assume an idiographic perspective and examine the contextualized observations from a representative company in view of particular theoretical rationales, as opposed to adopting a purely a-theoretical approach (Levy, 2008). However, recognizing the constraints of theory-guided study, we also apply a systematic inductive approach to derive concepts from the

collected data with qualitative rigor (Gioia, et al., 2012) going back and forth between observations and theory to 'abductively' improve our understanding of both (Dubois and Gadde, 2002). The case study of a major European manufacturing firm provides insights into the challenges of forward integration into distribution, sales, services, and the logic assumed to justify the use of certain governance instruments.

In this industry, both upstream manufacturing capabilities and downstream distribution, sales, and service activities are considered important to create value and competitive advantage. This market context is comprised by complex technical products sold to very demanding customers operating in dynamic markets representing what is referred to as *complex distribution* (Bering, 2020a). The economic rationales for forward integration in this industry argue for value creation from differentiated products that satisfy specific customer needs and relationships (e.g., Baines et al., 2007; Lightfoot et al., 2013; Mathieu, 2001; Oliva and Kallenberg; 2003). The case study explores how this representative manufacturing organization governs its forward integration platform and product distribution efforts towards the final users in the market. The generated insights offer a contextualized explanation for the choices made to govern forward integration in a large incumbent firm, and the differential performance outcomes across peers in the industry that derive from this.

The remainder of the article is structured as follows. First, we present the key theoretical rationales that inform the case study of forward integration, introduce the applicable *complex* distribution context, and discuss contractual arrangements between manufacturing and distribution. Then we outline the empirical study on governance of forward integration in the identified manufacturing firm presenting the qualitative study and its findings. Finally, we summarize the results and discuss the implications of the acquired insights.

BACKGROUND

Manufactured products can take different forms and provide possibilities for amended use among various buyers before they reach the markets for the final users; this is mediated by downstream sales and distribution activities. A manufacturer of intermediary products that provide standard components to adjacent downstream markets for use in different final products will face low requirement for investments geared towards specific downstream customers.

Conversely, when the manufactured products are for sale to fulfill specific needs of downstream end-users, there is a need to coordinate investments and efforts with the distributors that fulfill important sale and service activities. The manufacturer and distributors invest in specific assets and resources that hold a higher productive capacity in the specific trading relationship, compared to the second best alternative use. The implied *asset specificity* is said to generate incremental income, or quasi rents (Klein, Crawford and Alchian, 1978; Williamson, 1979, 1985). In other words, when the demand for the manufacturer's products depend on value adding features in the adjacent downstream market, the relationship to the distributors become increasingly important.

In a long-linked technology, one activity in the value chain depends on successful completion of adjacent activities to produce, add value, and distribute the final output (Thompson, 1967). When long-linked value chains develop asset specific interdependency, we can distinguish between two representative types of manufacturer-distributor conditions referred to as *directional* and *complex distribution* contexts respectively (Bering, 2020a). These two distribution contexts contains differences in the needs of end-users' aspects that are to varying degrees unknown to the value chains driving force, the manufacturer, and where codification of adjacent business units activities and product features are difficult (Bering; 2020a; Gereffi et al., 2005, 2018).

Under directional distribution, the business model's value creation (Teece, 2010) predominantly derives from the manufacturer's resources and capabilities embedded in the tangible product. The product alterations made by the downstream distribution are relatively simple and designed to support the manufactured tangible product (Mathieu, 2001; Tukker, 2004), and are often comprised in traditional franchise arrangements (Lafontaine and Raynaud, 2000; Lafontaine and Slade, 2007). Under complex distribution, the cooperation between manufacturer and distributors is more demanding because the intermediary product of the manufacturer requires additional engagement of resources and capabilities from the distributors (Mathieu, 2001; Neu and Brown, 2005; Spring and Araujo, 2013; Story et al., 2017; Tukker, 2004). The distributors now engage in extending the long-linked technology, where special customer requirements linked to the product complexity, are satisfied using the distributors' idiosyncratic resources (Nooteboom, 2004; Thompson, 1967).

When the long-linked interactions no longer are simple arm's length transactions, but enhance asset specific investments capable of generating quasi rents, they become exposed to hold-up; this is where opportunistic behaviors from partners may seek to appropriate the quasi rents (Klein et al., 1978; Williamson, 1979). In the case of forward integration, opportunistic distributors can appropriate the manufacturer's profits from the specific nature of investments with a high degree of plasticity, reflecting a wider range of investment options and information asymmetry (Alchian and Woodward, 1978; Gibbons, 2005, 2010). This entails two types of transaction costs. Asset specific investments can be vulnerable to hold-up where quasi rents are appropriated (Klein et al., 1978; Williamson, 1985) or to moral hazards (Alchian and Demsetz, 1972; Salanié, 2005) where quasi rents are diluted as distributors shirk on efforts that are difficult to monitor. When asset specific investments have low plasticity, they are vulnerable to hold-up but are immune to moral hazard if the associated monitoring is easy. In contrast, when the effects of efforts are difficult to detect, asset specific investment, or 'plastic' assets, can be vulnerable to hold-up as well as moral hazards (Alchian and Woodward, 1988). In short, proper integration of business activities can offset appropriation of quasi rents, whereas specific investments in plastic assets remain exposed to moral hazards (Alchian and Woodward, 1988; Gibbons, 2005, 2010). These concerns are typically considered in the contractual arrangements between interacting entities.

In the context of directional distribution, the business model builds on the manufacturer's product attractiveness in the market for the end-users. The distributors' transformation of the manufactured product offering is simple. In combinations with services, the distributors aim to support the sale of the manufactured product, and therefore do not challenge the knowledge and capabilities residing inside the manufacturer. The codification of product specifications and related distributor investments is relatively easy for the manufacturer to accomplish (Bering, 2020a; Gereffi et al., 2005, 2018; Mathieu, 2001; Tukker, 2004). The efficiency of distribution therefore depends on contractually defined investments where asset specificity and human effort add to the generation of quasi rents. The business model offered by the manufacturer must give the downstream distributors incentives to invest in mutual asset specificity that exceeds the distributors' opportunity costs (Klein, 1995). The provisions that the manufacturer provides to promote this are usually made by giving access to the product brand and offering a price sufficiently low to allow the distributors to profit from on-selling the products.

Investment requirements in asset specificity under directional distribution can be considerable and represent an opportunity for the distributors to hold-up the manufacturer by haggling over the required investments. Empirical studies of forward integration identify the importance of asset specificity, but also the plasticity of investments related to moral hazard exposures (e.g. Andersen and Schmittlein, 1984; Baker and Hubbard, 2004; Brickley and Dark, 1987; Brickley et al., 2003; Lafontaine, 1992). Hence, the manufacturer will seek to protect the provisions used to incentivize distributor investments in asset specificity. This is accomplished through use of self-enforcing mechanisms that seek to internalize the opportunism of moral hazards (Klein, 1995; Kalnins and Lafontaine; 2013; Lafontaine and Raynaud, 2000). The contractual terms therefore seek to link the distribution of profits to outputs when there is an accurate measure of inputs (Anderson and Schmittlein, 1984; Anderson, 1985; Lazear and Gibbs, 2014) or impose a possibility of losing access to the share of the manufacturer's quasi rents (Klein, 1995; Lafontaine and Raynaud, 2000). This leads to a governance regime where economies and interdependencies between manufacturing and distribution are coordinated under the manufacturer's authority – using instruments like planning and standardization (Thompson, 1967).

When market conditions commensurate with complex distribution, distributors are required to assume a more entrepreneurial value-adding role (Baines and Lightfoot, 2014; Bering, 2020a; Neu and Brown, 2005; Woodruff, 2004) that increase the complexity of interdependencies between the manufacturer and distributors (Thompson, 1967). The manufacturer's intermediary product now appears more unfinished, and the bridging role of downstream distributors to satisfy final customer needs requires the engagement of different resources and capabilities (Nooteboom, 2004; Story et al., 2017; Teece, 2010). This reflects situations of complex business activities and transactions linked to specific resources and capabilities between interdependent parties (Bering, 2020a; Gereffi et al., 2005, 2018). Under complex distribution, the manufacturer must offer the downstream distributors a product input that holds potential for the distributors to earn quasi rents from the added value related to their own asset specific investments (Klein et al., 1978; Williamson, 1979). This includes investments in intangible assets like specific knowledge and processes, in addition to an entrepreneurial mindset that can extend the value of the manufactured product. These extended activities are based on specific resources and knowledge that are difficult to codify and transmit through the standardized coordination mechanisms and formal governance structures (Bering, 2020a; Gereffi et al., 2005, 2018; Jensen

and Meckling, 1990). These conditions also reflect downstream distributors that operate in a demanding multitasking environment (Holmström and Milgrom, 1991; Shepard, 1993; Slade, 1996).

The dual (upstream and downstream) locations of (and investment in) relevant resources and competences change the nature of the interdependencies between the manufacturer and the distributors from being purely *sequential*, to also being *reciprocal* (Thompson, 1967). Hence, the upstream manufacturer and the downstream distributors are mutually affected by various externalities, but also depend on the specific competences and resources of each other as the means to enhance their joint competitiveness. This distributes the responsibility to resolve and coordinate interdependent entrepreneurial and instrumental challenges that are linked to changes in market conditions and product complexity more evenly between the manufacturer and the distributors (ibid). The more complex distribution conditions make the manufacturer dependent on updated market information from the downstream distributors. This relates to both the manufacturer's own product innovation and the distributors' investments in intangibles, like knowledge specific competencies and entrepreneurial efforts closer to the end-users. It also makes the contractual codification of product elements and processes very difficult and costly (Bering, 2020a; Gereffi et al., 2005, 2018). However, this complexity of interdependent relations also makes it challenging to obtain accurate price information in the markets for end-users; this makes the profit sharing arrangements vulnerable to manipulation and misuse of asymmetric information.

The mutual interdependencies between manufacturing and distribution – and higher reliance on downstream entrepreneurial activities – have been subject to empirical studies. One perspective is that the increasing plasticity of asset specificity makes it difficult for the manufacturer to tie the distributors' measurable efforts to outputs, and as a consequence the self-enforcing contracts lose their corrective functionality (Raynaud and Lafontaine, 2000). This means, that the plasticity of asset specific investments becomes a threat to the sharing of quasi rents. This shifts the focus from monitoring moral hazards to incentivizing the different constituents as residual claimants of their own private efforts (e.g., Baker and Hubbard, 2004; Brickley and Dark, 1987; Brickley et al., 2003; Kosová et al., 2013; Lafontaine and Bhattacharyya, 1995; Norton, 1988; Oliva and Kallenberg, 2003, Woodruff, 2002).

The increased importance ascribed to incentivize downstream entrepreneurial efforts in complex distribution uncovers a need to consider different contractual mechanisms. The

asymmetric nature of information and knowledge between the manufacturer and the distributors makes it difficult to align the interdependencies in explicit coordination mechanisms, like planning and standardization. This ultimately leaves the contracts incomplete (Williamson, 1985); many elements in reality are difficult to meter and non-contractible when distributors are forced to prioritize between activities (Holmström and Milgrom, 1991). Hence, the manufacturer is no longer able to exercise control over the distributors' investments, but must rely on mutual coordination of reciprocal interdependencies (Thompson, 1967). This relates to the distribution resources and competences like service oriented entrepreneurial capabilities (Brickley and Dark, 1987; Gebauer et al., 2005) that often represent non-contractual intangible investments (Grossman and Hart, 1986; Woodruff, 2002). Therefore, the contracts must incentivize the distributors as residual claimants to their own tangible and intangible assets, and future returns from their value creating entrepreneurial activities (Lafontaine and Raynaud, 2000).

This discussion of contrasting types of distribution, directional and complex, makes it clear that the decision of a manufacturing firm to integrate forward into distribution presents different governance challenges dependent on the prevailing market context. As manufacturing firms move towards conditions of complex distribution, the integration challenges become increasingly indeterminate without easy solutions. Empirical studies find that forward integration can provide competitive advantage but the success rates in achieving this remain rather low (e.g., Benedettini et al., 2015; Gebauer et al., 2005; Neely, 2008; Harrigan, 1986; Visnjic et al., 2016). This illustrates that complex distribution contexts require different integration approaches, therefore presenting a new governance challenge (Bering, 2020a,b).

To better understand how contemporary manufacturing firms deal with this challenge, this article poses the research question of how manufacturing firms govern forward integration in an increasingly complex distribution environment where manufacturers seek to differentiate products to customer specific needs and gain competitive advantage. Given the sometimes conflicting economic integration rationales – and observing that different firms operating in the same manufacturing industry pursue different business models with different outcomes – we also seek to uncover why certain firms govern forward integration the way they do.

CASE STUDY

When different boundary theories do not always provide the same ex post incentives (Holmström and Milgrom, 1994) this suggest that it is important to understand how manufacturing firms actually govern their integrated distribution activities. To study this phenomenon of governance between manufacturing and distribution in its wholeness, a case analysis is appropriate (Flick, 2014; Welch et al., 2011; Yin, 2018). A case-study approach in particularly relevant when the context influences the governance choices in ways that are difficult to identify and isolate, and that cannot be manipulated to resemble a natural experiment (Yin, 2018). We use multiple primary and secondary data sources to inform the case study thereby strengthening construct validity and rigor (Gioia et al., 2012; Yin, 2018). The primary data sources are interviews conducted with corporate actors at different hierarchical levels, functional areas, and geographical locations. In addition, various internal archival data as well as external analyses and reports provide complementary information. We cannot claim ignorance to prior knowledge about the phenomenon under study and believe that an initial framing of key issues can help guide the inquiry, where the collection of qualitative information provides a basis for inductive findings (Levy, 2008; Reichertz, 2014). Therefore the case study does not pursue grounded research (Strauss and Corbin, 1998) in its pure form, but is partially framed by the prior theoretical insights about essential challenges associated with long-linked forward integration. The adopted methodology uses a systematic approach that gets from the collected data towards theoretical themes with aggregated dimensions to describe the governance approach often referred to as the 'Gioia method' (Gioia et al., 2012; Saldaña, 2016; Wenzel et al., 2019).

Case selection

The European truck industry is representative of forward integration in manufacturing and a major player in this industry (the 'Case Company') agreed to participate in this study. The European truck manufacturing industry is capital intensive, mature, and highly competitive. It experienced a major consolidation phase in the 1970s and 1980s. The expanding internal markets of the European Union with harmonized legislation and technical standards on emissions, vehicle weight, sizes, load capacity, axle configuration, etc. led to increased cross-

border trade. The barriers to protect small national manufacturers were removed and players that lacked scale and product quality went bankrupt or were acquired (e.g., Bedford, E.R.F., Hanomag, Leyland, Magirus, Pegaso, Saviem, OM, Ö.A.F.). Today the European truck manufacturing industry consists of 7 major brands, owned by 5 major public companies, DAF (PACCAR), IVECO (CNH/FIAT), MAN and SCANIA (VW), Mercedes (Daimler), Volvo Trucks and Renault (VOLVO Group). Initially the truck manufacturers relied on a network of independent entrepreneurs to import and provide selling and servicing activities to the final users of trucks in the local markets. However, during the 1980's, some manufacturers started to integrate forward by first taking over major import companies and later acquiring distributors catering to the final users. Among the five competitors, the American owned DAF is least integrated, Mercedes and IVECO have divested some distribution activities, whereas Volvo, SCANIA and MAN are considered the most integrated manufacturers.

The truck manufacturing industry predominantly represents business-to-business transactions with customer size ranging from single owner-drivers to large transportation companies with more than 10,000 trucks in the fleet. The trucks cater to multiple customer segments that differ in technical complexity; the degree to which the products from the upstream factory are ready for final customer delivery including services during its life cycle. Trucks sold to large standard fleet owners (e.g., DHL, Kuehne & Nagel, FERCAM, etc.) are technically more standardized and simple and require less downstream value adding activities whereas specialized users may require more technically complex chassis configurations like multi-traction and steering systems, mounting of concrete mixer, crane, and tipper systems. These downstream product adaptations and add-on services require different resources and competences among the distributors before the products are delivered to the final customers. At the same time this presents a higher revenue and profit potential due to demanding use and longer lifetime.

These industrial products may have a lifetime of more than 20 years with multiple owners along the way who demand effective services to keep the trucks operating economically. They expect quality consultancy from the distributor as important elements in the buying decision and subsequent later services. The add-on services can, to some extent, be standardized by pooling horizontal and vertical value chain activities, but often rely on factors that are hard to describe; this includes relationships, trust, entrepreneurship, specific knowledge and expertise that can differentiate the individual distributors. The basic elements of product development and

manufacturing like engine capacity, weight, suspension types, etc. are parameters considered by the upstream factory based on own engineering and production competences. They may be independent from the distribution differentiation. However, when new market trends and customer demands arise in the downstream end-user markets, the factory relies on communication and cooperation with the downstream distributors as the receptors for new market developments.

The product market for final users is a dynamic business-to-business environment with frequent interactions and recurring transactions, from buying the trucks to subsequent repair and maintenance relations. A country managing director (interview 66) responsible for national sales in the Case Company expressed this dynamic in the following way:

> "I just had a meeting with a huge customer who runs a couple of thousand trucks … he said clearly, 'Actually, I don't care what truck I'm driving - the truck needs to be fit for purpose. And the service needs to be there. And the spare parts availability needs to be fine. Service 24[emergency service]' … it's not [about] having the best products. You can build the world's best truck in the world, every truck or bus or van has eventually an issue … it shouldn't be production or engineering-focused. It needs to be customer, operator-focused".

This presents an emerging industry dynamic where the increasing importance of downstream entrepreneurial activity and customer responsiveness constitutes a complex distribution context. This industry setting has also been used in studies (Baines et al., 2009; Baines and Lightfoot 2014; Bustinza et al., 2015) of advanced servitization in manufacturing firms and reflects prevailing market conditions.

The Case Company has an annual production of more than 80,000 units, with revenues in excess of 10 billion Euros, return on sale slightly above 3% and approximately 38,000 employees. The company's historical roots date back more than a century. It is widely recognized in the industry for high quality and major engineering innovations embedded in the tangible features of the manufactured product. The Case Company traditionally has relied on its engineering and manufacturing resources and capabilities to stay competitive in the face of increasing pressures from end-users to deliver more customer-oriented solutions. However, it has struggled to contain large fluctuations in sales volume and profits over the past 15 years with mediocre customer satisfaction reviews compared to industry benchmarks. The company

suffers from an image, referred to as a ‘grey mouse’ by people in the industry due to a lack of distinctive product features and service offerings. The corporate headquarters has taken initiatives to address this situation for more than a decade but only to realize marginal improvements.

The decision to integrate forward was initiated in the early 1980s after wars in the Middle East and the second oil crises adversely affected lucrative markets outside of Europe, e.g., in Iran, Iraq, Nigeria, and Syria with sizeable large-batch buyers of trucks. The Middle Eastern markets almost disappeared overnight and left the company to rely on its home market and other European markets. The export to other European countries was accomplished through private entrepreneurs who invested in local sales and service organizations. These private entrepreneurs were often financially weak, and since they prioritized return from their own investments, this created conflicting goals as the Case Company needed volume to gain economies of scale. As a consequence, the company embarked on a strategy of forward integration (Figure 1) and today the company has own representations in almost all European countries and some major overseas markets.

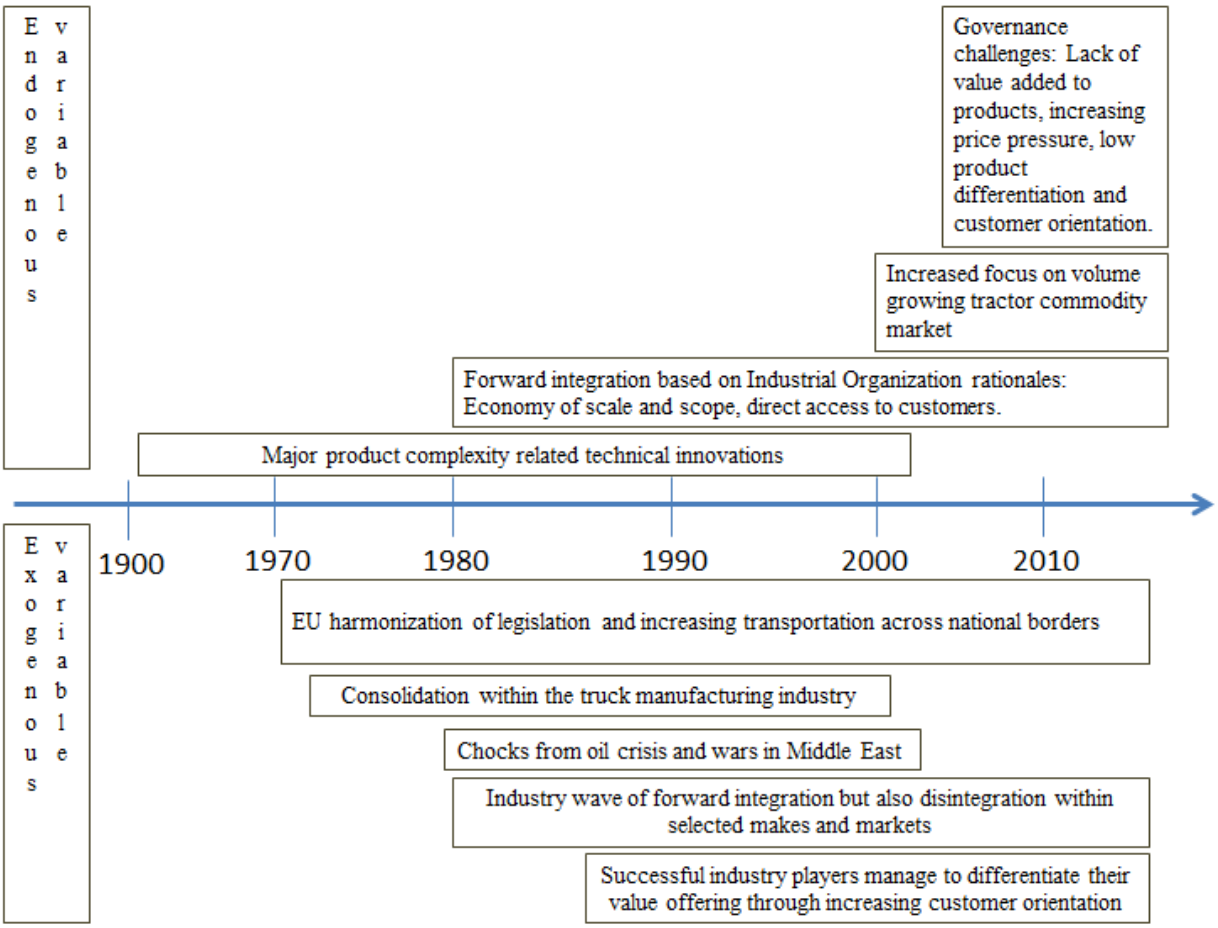

Figure 1. Case Company Developments in the Truck Manufacturing Industry 1900-2020

The value chain has manufacturing at corporate headquarters (HQ) acting as a profit center selling trucks and spare parts to the HQ Sales and Service (HQSS) who in turn sells to the downstream distributing entities in the countries. These national sales organizations sell directly to the final customers through wholly owned dealers or through private capital dealers who invoice the customers. The HQSS holds authority over the downstream distribution entities that act as sequential profit centers, buying from HQSS and invoicing the final buyers. The transfer of goods is mandatory and the wholly owned distributors cannot buy from outside suppliers if manufacturing is able to supply – unless there are (very) good reasons for it. Exceptions mostly relate to non-original parts, including things like batteries and tires or special customer demands.

The decision to integrate forward into the import business of own products in selected countries and later into distribution to the final users introduced new governance challenges. A director (interview 12) with over two decades of experience both at headquarters and in country organizations expressed these interdependencies characterizing the entrepreneurs as acting like 'kingdoms' (as perceived by the headquarters) using asymmetric information to their advantage and creating moral hazard issues:

> "The local management [..] really developed the country with an entrepreneur start. Going with the different dealerships … it was really a local strategy, let's say that … when they needed money or decisions, they were coming to HQ asking for approval … they had direct contact to the board … we had local kingdoms, yeah … this is one of the disadvantages of this strategy … Everybody goes on his own.
>
> Well, it was always a discussion … you sent your draft, and then it came back … the planning process in the past was not a most efficient one because there were several process steps …you presented your first draft. It was sent to [HQ]. Then [HQ] said, No … then, sometimes we'd get [..] information from the different business units in Germany, saying no, but you should achieve this market share. So, you adapt you're planning again … the whole process took six to eight months.
>
> Obviously, if you have profits, it's easier to discuss. But the annual profit was discussed in the annual year-end meeting … If they had to make more provisions on things … then, obviously, the money went away, but it gave you more flexibility for the next planning in order to have higher spending. That was part of the next negotiation … this was the procedure.
>
> I remember very well when Mr. [name] in former times went to HQ he had very good results. So, obviously, HQ wanted to achieve more results. So there was always the discussion we keep the provision or we don't … it was kind of taking precautionary measures having this reserve for the local company."

These quotes identify several interesting points. They illustrate how effects of asymmetric information and authority where local management makes concealed provisions to meet the expectations at headquarters (Zimmerman, 2011). They also explain why headquarters began investing in IT systems to standardize processes and create transparency on local performance.

It reflects the tensions between market-oriented entrepreneurial efforts and a corporate requirement to increase sales as the essential elements the governance has to accommodate.

Data Collection

To sample data for our research, we first familiarized ourselves with the industry value chain in European truck manufacturing with particular focus on the Case Company (Figure 2). We used this to identify organizational functions, locations, and responsibilities and relevant individuals within them as informants to explain how the company integrates forward into various countries to reach the end-users. We gathered data from guided interviews with informants in different HQSS functions and from distribution organizations in nine European countries. The interviews were conducted between 2015 and 2018, and secondary archival data was gathered throughout the period including longitudinal data spanning the period 2005-2018 to corroborate findings.

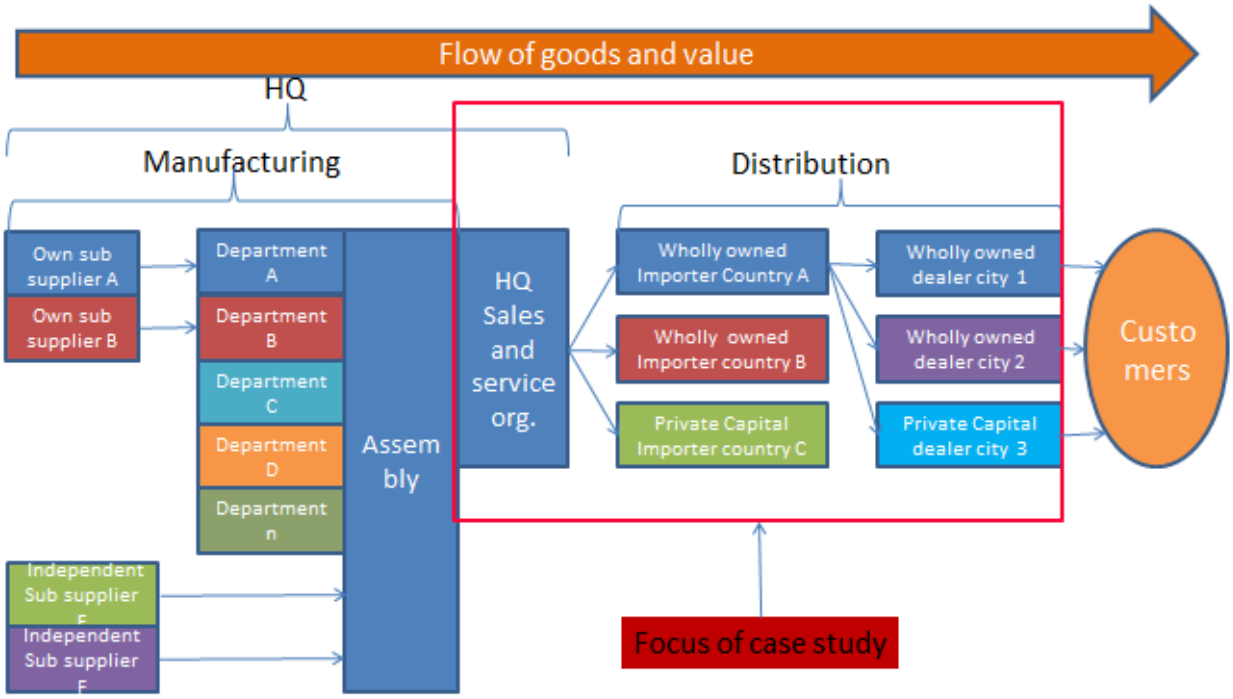

Figure 2. The Corporate Value Chain from Manufacturing to the Final End-Users

[the study collects primary data from HQSS and local sales and service entities within the 'red box']

The interviewees selected for primary data collection are located in business functions that represent the interface between HQSS and the national organizations, including managing directors, finance directors, sales directors, after sales directors, marketing directors, product managers, and business development managers. To protect the anonymity of interviewees and obtain honest feedback, we issued non-disclosure agreements with all participants. The interviews were semi-structured with an average length around one hour. All conversations were recorded and transcribed for subsequent coding. Secondary archival data was obtained from various sources like consulting analyses, management presentations, customer surveys, industry reports, observations from internal meetings, and email correspondence (Table 1). We conducted a total of 22 interviews at HQSS and 43 interviews at national distribution and sales organizations.

Company A General data source overview		
HQ Sales and Service		
Number of interviews 22 (total)	Positions	Organizational unit
1	CEO/Board member	General Management
4	Senior Vice President	General Management, Sales, After Sales,
5	Vice Presidents	General Management, Finance, Sales, After Sales,
6	Directors	General Management, Business Development,
6	Managers	Sales, After Sales, Business Development, Finance
Distribution		
9	Countries	
Number of interviews 43 (total)	Positions	Organizational units
16	Vice President/MD/FD	General Management, Finance
18	Directors	Sales, Finance, General Managemet
7	Managers	Sales, Finance, Business development
2	Owners	Private Capital partner
4		
Archival Data		
Numbers	Sources	Focus
58	e-mails	Governance related issues
41	Presentations (Power Point and catalogs)	Summits, business reviews, country strategy plans ect.
15	Strategic programs	Programs intented to bring organizational and structural change
1	Consultancy report	Focusing on analyzing company "hot topics"
2	External statistical data	Market share and customer satisfaction surveys
1	Incentive schemes	Country management incentive structure
50	Observations	Own observations related to governance
1	Presentation	Transfer pricing change implementation
1	Meeting	HQ and country A discussing governance frustrations
13	Annual Report	Profit and volume development

Table 1. Primary and Secondary Sources of the Sampled Data

We developed guiding research questions (Table 2 in appendix) based on key issues identified from prior reviews of the extant literature on forward integration rationales included

in a research protocol. This was expressed in an interview guide with corresponding open-ended questions structured around four hierarchical focal areas or topical categories: 1. Knowledge, delegation, structure, and coordination, 2. Incentives and pricing of intra firm transactions, 3. Use of authority and performance monitoring, and 4. Innovation and organizational dynamics. The interviews departed from the guidance, but open-ended questions with room for new insights about the governance approach was adopted after the decision to integrate forward. The primary data collection from semi-structured interviews used similar questions across levels and functions along the value chain, employing certain filters to pose functionally relevant questions at the individual interviewees (Table 2 in appendix). The secondary data was obtained from inquiries about the means (meetings, presentations, IT systems, etc.) used to govern (coordinate) the value chain interdependencies, and then sharing internal communication like emails, reports, and surveys under the non-disclosure agreements.

We used NVivo as qualitative data analysis software to code the data and structure the information from different sources. The first step in the coding process was to assign attributes to each primary and secondary data source. This allowed us to assess the information across organizational origins and make comparisons between HQSS, national distribution companies, country locations, functional units, hierarchical positions, and type of information (interviews vs. archival data) (Table 1 and Figure 2). We adopted a multiple case design (Yin, 2018) contrasting data between HQSS and national distribution, between country organizations, operational functions, and hierarchical levels. Using a combination of primary and secondary sources provided triangulation of information to enhance consistency and validate observations (Flick, 2014; Yin, 2018).

Data analysis

For the initial coding cycle, we categorized dialogues based on the topic discussed to form our overall understanding of the research questions (Levy, 2008; Saldaña, 2016). From the transcribed interviews we applied a lumping technique together with simultaneous coding (Bazeley and Jackson, 2013; Saldaña, 2016). There were several reasons for this. As we started the interview process and performed the initial coding, we realized that the interviewees did not perceive the guiding categories in a strict manner as suggested by the protocol and questions (Table 2, Appendix). This allowed an answer like (Interview 7) “and then, of course, you have

this funny system of transfer prices, yeah, which leads to the fact that you do make some decisions locally which are wrong for the [corporate] organization" to be lumped and coded simultaneously as a description related to category 1 (due to the coordination and responsibility element) as well as to category 2 (due to the transfer pricing element). Interviewees often gave lengthy and rich answers (e.g., 2-7 minutes) revealing multiple issues and reflections on origin, relatedness and causality even jumping back and forth across several of the guiding categories. Hence, the lumping technique in this initial cycle allowed inclusion of larger parts of the dialogues providing a richer understanding of interviewee answers and their contexts.

From the initial four categories, we inductively coded the interviewees' perceptions of the studied phenomenon(s). In this first inductive coding process the vast amount of descriptive information was then compressed into first order concepts (Figure 3). In doing so, we generally adhered to the phrasing and expressions used by the interviewees (Gioia et al., 2012; Wenzel et al., 2019). This process of reviewing and recoding the first order descriptive concepts within the four categories was a constant work in progress during the entire data gathering phase. To help this concept coding, analytic memos and annotations were used to support other relevant considerations in the coding process. While memos were made right after the interview, annotations were made during the phase of transcribing the interviews which incorporated both audio and transcribed inputs to capture pauses, thoughts, clarification, etc. In this coding cycle, we were surprised by the consistency among interviewees at headquarters and national distribution entities where answers pointed to the same issues regarding how governance actually was performed in practice and how it led to misaligned coordination, which has been recurring issue in the company for two decades.

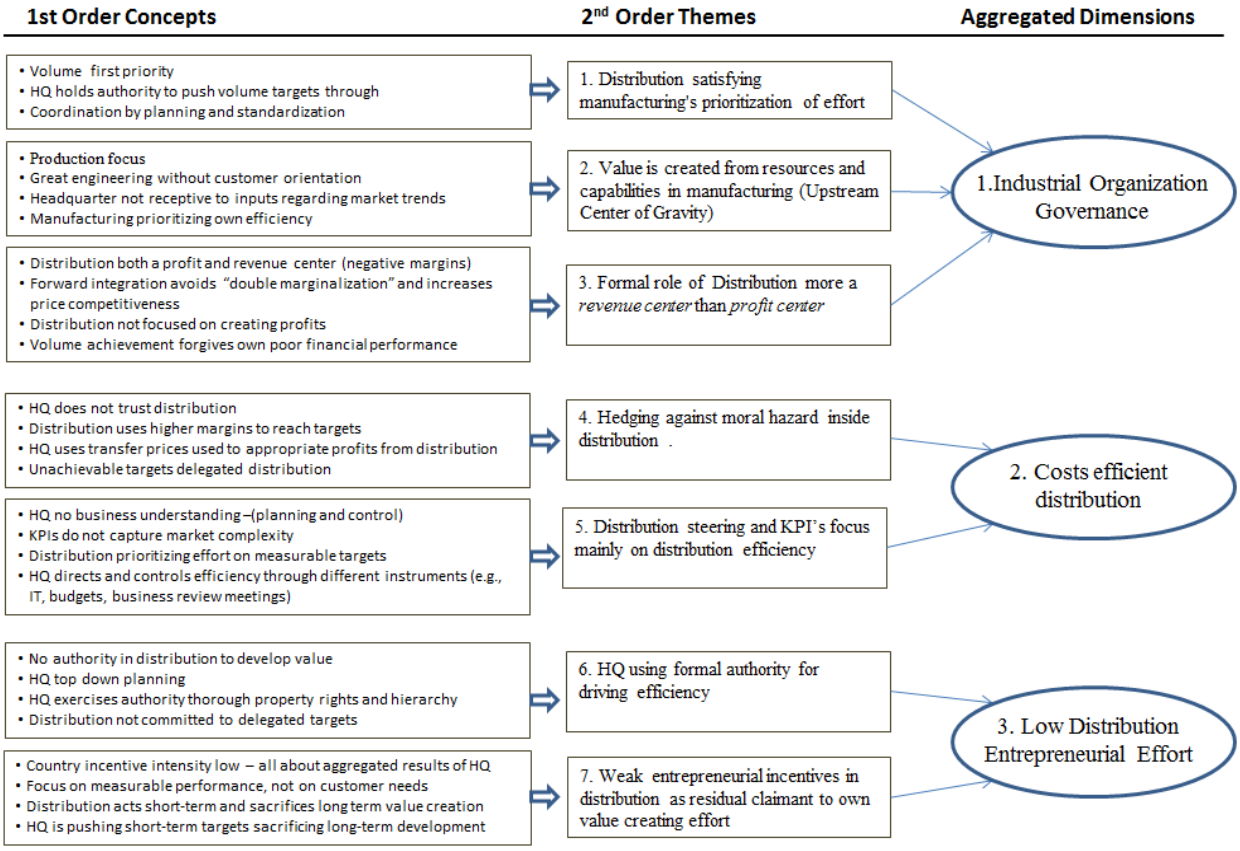

Figure 3. Inductive Coding from 1st Order Concepts to 2nd Order Themes and Aggregated Governance Dimensions

The next step in the data analysis was to move from the interviewees' initial descriptions and categories towards a more theoretical grouping. The data codes that in the first cycle were grouped into concepts based on resemblance in nature and character were now analyzed and compressed into more abstract themes aimed to unify the information around a meaningful whole. This was done by employing theoretical perspectives that offer explanations on what is going on (Gioia et al., 2012; Saldaña, 2016). At this stage we went through several (re)coding (Saldaña, 2016) cycles going back and forth between the 1st order concepts, using primary data against secondary supporting data, to identify and establish 2nd order themes. This cycle led to the identification of seven theoretical themes all related to the governance of interdependencies between manufacturing and the integrated distribution entities. In relation to the research question and the associated interview protocol, this part of the analysis aims to answer how a manufacturing firm governs forward integration. This analytical cycle inevitably addresses the

interdependencies between manufacturing and distribution as described under the complex distribution scenario. It also considers how the four hierarchical focal categories explain the governance approach adopted by the company.

The 1st order concepts derived from the interviews and the generation of 2nd order themes were finally agglomerated into three major dimensions. This last stage of the analysis was inspired by previous analyses that offer seven theoretical themes (Braun and Clarke, 2006; Saldaña, 2016), describing how manufacturing firms govern forward integration into downstream distribution in a complex distribution environment. Using empirical data and theory to distill aggregated dimensions of the studied phenomenon reflects the transition towards an abductive form (Dubois and Gadde, 2002; Gioia et al., 2013; Welch, 2011) to address the *why* in the research question. In doing so, we acknowledge that the last of the three aggregated dimensions captures an (unintended) outcome of the governance approach adopted by the company.

The following section provides selective transcripts from the interviews (Table 2, Appendix) used to develop 1st order concepts and the transition to 2nd order themes and finally illustrating the specification of aggregated governance dimensions and the theoretical aspects related to them as outlined in Figure 3.

FINDINGS

The analysis of collected data (Figure 3), the categorization into concepts, further condensation into seven 2nd order themes, and finally collated into three aggregated dimensions describe the reasons ('why') the company governs forward integration the way it does ('how'). The rationales are to (1) optimize the industrial organization (scale and scope economies), (2) drive an efficient distribution (minimize transaction costs), and (3) observing a low entrepreneurial effort in the distribution (an unintended effect). While the company for many years relied on superior manufacturing capabilities to secure competitiveness in the consolidated truck manufacturing industry, new challenges emerged as the market conditions moved toward a complex distribution context. In the market for trucks, the customers increasingly demand flexible offers from their suppliers in terms of solutions adapted to optimize the long-term value to be derived in use of the purchased products (Baines et al., 2007). This means that it is no longer enough to manufacture a durable truck that is reliable, but the trucks should now also

meet the customers' demands for tangible and intangible value offerings. In a complex distribution context where advanced services rely on the entrepreneurial engagement of distributors to identify and deliver on emerging customer needs, it is difficult to contract and accurately measure the performance of distribution (Alchian and Woodward, 1988; Brickley and Dark, 1987; Grossman and Hart, 1986; Oliva and Kallenberg, 2003; Woodruff, 2002). This has implications for management's ability to evaluate moral hazards and proper incentives (Kalnins et al., 2013; Kosová et al., 2013; Lafontaine and Slade, 2007; Zimmerman, 2011).

First aggregated governance dimension.

The first governance dimension refers to the traditional manufacturing rationales often found in the industrial organization literature, including concerns about economies of scale and scope (e.g., Bain, 1968; Pindyck and Rubinfeldt, 2009). While scale and scope economies are less important today than a century ago (Teece, 2010), it is still important for large manufacturing firms to meet certain volume thresholds and make them competitive in industries with large upfront investments in R&D and production facilities. The derivation of 2nd order governance themes notes that distribution must honor the manufacturing priorities for sales volume where manufacturing (at headquarters) dominates and distribution entities effectively act as revenue centers. This aggregated dimension is expressed as *industrial organization governance*.

The first (1st order) governance theme is the major role imposed on distribution to secure that the necessary output is generated in the market. This theme expresses the planning considerations and corporate budgets at the manufacturing headquarters with a primary focus on volume. Firms that use weak incentives following integration (e.g., Simon, 1951; Williamson, 1975) are often perceived superior in their ability to cope with adverse selection in a multi-tasking environment like complex distribution (Holmström and Milgrom, 1991, 1994). But, the reality of the Case Company is very different as it turns to manage the downstream distribution and sales efforts. While both the headquarters and distribution acknowledge the need for a customer focus, the forward integration and ownership of distribution has reduced the incentives to adopt a customer-focused approach. This leaves the primary task of distribution to protect the economic efficiencies of manufacturing sealing it off from market turbulence and fluctuations in demand (Thompson, 1967).

A country managing director (interview 11) stated that the volume targets were always derived from some projected production scale calculations that were "*dead given*" to avoid major cost problems. He explained: "that is always a purely one-way dialogue, a one-way monologue. They are doing this ´guidance standards´. They are doing everything. They are trying to standardize everything, everywhere … but there is not enough flexibility in the system to adapt to the local flavors."

This dynamic is clearly visible in the focus at headquarters. As a vice president (interview 33) put it: "I think it has to do with the focus from the factory, from [HQ city], has not been on retail. It has been on selling as many trucks as possible and selling as many parts as possible."

Another senior executive at the headquarters (interview 9) explains "I think it's mostly driven because of the history [of the company] I think. It's still a production company." This view is further echoed by a finance director of a country (interview 7), "nothing has changed in the last 20 years."

This lack at headquarters to consider downstream activities is visible from the views expressed by a financial manager (interview 2). He said "that production had the power to tell distribution, we need to produce 'x' amount of vehicles to be efficient, so please go sell."

A vice president (interview 9) at headquarters describes business review meetings as "steering the distribution where the countries are told what the goals are that they must adhere to."

The second (1st order) governance theme relates to the perception at headquarters that value is created by manufacturing and engineering resources and capabilities. Our inquiry shows that the company delegates responsibility to distribution to pursue ambitious sales goals with limited resources allocated to accomplish this. Resource investments in distribution activities are made predominantly to exploit the operational capacity and less to develop additional value creating capabilities and competences (March, 1991; Kindström and Kowalkowski, 2015; Nooteboom, 2004; Teece, 2010). With upstream manufacturing at headquarters perceiving that value is created from the resource and capabilities located in the manufacturing business, this reduces the organization's receptiveness to information from downstream distribution and sales entities regarding product complexities and changing market demands. Hence, the forward integration effectively neutralizes the corrective influence of adjacent markets and places authority around the manufacturing competences located upstream,

away from the final end-user markets (Teece, 1982). This describes an integrated organization with the center of gravity anchored with upstream manufacturing at headquarters (Galbraith, 1983; Ilinitch and Zeithaml, 1995) originating from prior successes. The following interview extracts provide further insight into this.

As one country after-sales director (interview 48) states: “we are a company of great engineers. We make fantastic engines, and from those engines we put them into a truck, and then once we sell the truck … once we've done that, that's it. For me, they forget there's a customer.” A statement from a country managing director (interview 66) continues: “I'm amazed what outstanding products we are able to produce and develop without talking to customers.”

This tension is further elaborated by a senior vice president at headquarters (interviews 25): “we have been talking so much about ourselves and our great engineering skills but not really having in mind that there is a customer touch point and how to satisfy the customers, when at least our top competitors were already in the game of talking about customer satisfaction.”

Another country managing director (interview 11) describes the use of market input in manufacturing as follows: “because you see that, let's say, [..] requests for changes, request for products, request for anything goes basically back to the [HQ] sales department, which is where we have contact … they will basically forward it back to the production. Then everything stops.”

From an interview at headquarters (interview 25) we note the same challenge: “I would rather say it's our damn task to become the voice of the customer. It's also the task for our organization to really figure out by being close to the customer, to understand the business and their needs [..] And talking more precisely here, we have definitely room for improvement and we are not the benchmark in the industry.”

A country managing director (interview 66) refers to the lack of market inputs describing an example from a product clinic he attended at the factory. Here the manager in a major product area was excited about the input from a customer. The responsible engineer claimed it was the first time during his fifteen years with the company that he talked to a customer, stating: “obviously [we are] being driven by engineers because a couple of our CEOs were engineers and have never been in the market [..] the majority of board members have never ever worked in

the market. Actually I don't know about a CEO coming from sales. All our CEOs either had controlling/accounting backgrounds or R&D, but never sales and marketing."

The third (1st order) governance theme relates to downstream distribution taking the (in)formal status of a revenue center. A fundamental premise of the Case Company builds on economic efficiency rationales to optimize volume. Engaging in forward integration circumvents the need to share provisions with an independent distribution function (Klein, 1995; Raynaud and Lafontaine, 2000) and avoids the double marginalization problem embedded in sequential monopolies (Pindyck and Rubinfeldt, 2013; Riordan, 2008; Tirole; 1988). In the case of double marginalization, the price of manufacturing's intermediate product becomes the cost of the distributor. With two sequential profit optimizing monopolies, the seller (manufacturer) will set the price of the intermediate product to optimize own profits at a level that cause a profit maximizing distributor to forgo potential business (Brickely et al., 2015). The integrated distribution activities are not acting as true profit centers, but are more correctly described as revenue centers (Brickley et al., 2015; Eccles, 1985). This means that resources are used to optimize headquarters demand for sales volume, as opposed to generating incremental profits from distribution based on its own resources and efforts (Eccles, 1985; Grossman and Hart, 1986; Holmström and Tirole, 1991).

A conversation about the incentive structure with a country finance director (Interview 14) clarifies that headquarters wants to achieve the aggregated sales goals of manufacturing: "basically 90% of the bonus is out of their [country managing director (MD) and finance director (FD)] hands so they do not reject … because it doesn't matter anyway." Local incentives are not part of the business model, it being a production focused company, as he argues.

Another country managing director (interview 19) was especially critical about the process: "[HQ] can't understand the local market. The budget is all about achieving the central [HQ] budget, not the distributor [country's] budget."

Of course there are differences as one country finance director (interview 13) explains, "but the general perception is that sales takes first priority because this is what headquarters is pushing," and "it forgives poor financial results," as noted by a country managing director (interview 11).

A senior vice president at headquarters explains (interview 33) that, "to overcome this [double marginalization] problem, I mean, in principle, you could do this in two ways. Either you give the margin to the [countries-integrated distribution], and then there will be a situation where the [integrated distribution] will have a plus margin, and they will have to reach plus margin. That's one way of doing it. The other one is to measure the trade margin [consolidated] all the way from the factory to the market. And that's what they are aiming for now."

Another country finance director (interview 7) pinpoints the same problem: "and that is somehow the contradiction. On the one hand, [..] everybody told us, 'your local margin is not that important. We look at the total [consolidated] margin in the sales area,' but nevertheless, my personal targets, yeah, were just on my local result." He continues: "he tried [the country MD] to work to reach both. But in the end, he didn't [..] the market share he couldn't achieve. And of course, the margin, he could also not achieve."

A former board member, referenced by (interviewee 71) explained that if "sales" [functional unit] did not achieve its planned volume, the blame would fall entirely on sales, whereas if planned sales volume was achieved but financial targets were not, the blame would be shared with the financial department inside HQ.

Second aggregated governance dimension

The second aggregated governance dimension relates to the conscious intent to reduce costs in the distribution where resource allocation against budgeted sales targets can fuel moral hazards. This relates to distribution shirking on effort as the theoretical consideration in many empirical studies on forward integration (Lafontaine and Slade, 2007). The collected data identify two 2nd order governance themes related to the aim to ensuring a *cost efficient distribution*.

The fourth (1st order) governance theme targets the potential for moral hazards inside the integrated distribution. The evidence from empirical studies shows that firms integrate forward when the market context entails costly monitoring of agent inputs and related outputs (e.g., Andersen and Schmittlein, 1984; Baker and Hubbard, 2004; Brickley and Dark, 1987; Brickley et al., 2003). However, integrating asset specific distribution investments with a high degree of plasticity prevents accurate measurement of efforts and related outputs, therefore opening up moral hazard costs (Alchian and Woodward, 1988; Gibbons, 2005; Gibbons, 2010;

Kalnins and Lafontaine, 2013). The Case Company has clearly taken actions to mitigate these potential moral hazard costs in the downstream distribution. This is the case when headquarters delegates budgets where demanding top-down budgeting of sales and restrictive internal costs related to marketing, number of employees, etc. leave little room for discretionary spending to support distribution efforts. It is also reflected in the consolidation of revenues and profits at the manufacturing headquarters, although they are realized further downstream. Hence, the aim is to strengthen profitability at headquarters ensuring that as little cash as possible remain in the integrated distribution.

The data show that profits are consolidated at headquarters to make sure that local profits are not given to customers as discounts, as explained by a central director (interview 65). His response was based on a prior experience where cash was burned to increase local sales volume as a financial manager at headquarters explained (interview 12). A country finance director (interview 7) argued that transfer prices should make them a profit center but the logic of the transfer prices was awkward since they were based on negative local margins that did not make sense if the aim was to grow the business. This was echoed by a country director (interview 3) responsible for business development who claimed that headquarters for years had taken profits out of the countries and failed to prioritize long-term investments. A similar comment was made in relation to historical profit allocations made by a country finance director (interview 31), which he referred to as a "*grandfather principle*," as deciding whom to give money and whom not to.

More elaborate statements includes a country sales director (interview 22) explaining: "first priority [..] and then, in our daily steering, we are focusing always on volume. We are not even focusing on the money." This is echoed by a senior vice president at headquarters (interview 33). "And the biggest problem, I think, we have is that we're not selling new trucks at the consistent price because when we have too little order intake to fulfill the factory, then we go down with the price. We buy the orders." He continues, "in [brand name], you have the problem that the managing director of a country, he has a big budget for selling trucks. A lot of numbers. A lot of Euros. But he cannot decide himself which personnel to employ or not. He has to get an approval from [HQ] on the personnel he needs to employ."

A country MD (interview 43) explains "we have these targets, these [budgets] that is, in most of the cases, a bit, let's say, dreaming, wishes, extreme wishes. [..] Here, in this country, we spend 0.35% of the turnover in the marketing expenses. It is one-third percentage of what

they spent in other brands. [..] We don't spend in marketing because we need to spend in administrative costs. [..] A lot of internal inefficiencies that are stealing indirectly jobs to other activities or money to other initiatives, marketing is the first victim [..] we do not have people that is really needed to support the salespeople, product marketing [..] we should have more costs her, stronger organization."

Another country MD (interview 66) stated: "if you just have a terrible year then immediately there's a question mark behind the MD and the sales manager. Even if in the long-term run, you set up the right strategy [..] there's immediately an endless discussion because your [..] volume drops. But you don't get any awards that you managed the pipeline properly."

The fifth (1st order) governance theme relates to ensuring distributional efficiency using efficiency related targets and Key Performance Indicators (KPI). The data reveals how the company uses measurable KPIs to monitor the efficiency of distribution (Alchian and Demsetz, 1972; Anderson and Schmittlein, 1984; Lazear and Gibbs, 2014). The efficiency related KPI systems and processes are enforced by implementation of IT-based administrative systems, like SAP, that allow strict control and monitoring of process attainment and performance targets. It is also evident from the data, that the diagnostic KPI controls (Simons, 1995) are run by manufacturing to monitor distribution, and not the other way around.

When distribution acts as a revenue center and profits cannot be used to incentivize efforts in distribution, then the corporate goals must be achieved by using other incentives. The company has instituted top-down delegation of responsibility to the distribution entities and implemented a wide array of diagnostic control systems (Simons, 1995) to monitor the efficiencies and outcomes of the distribution activities. Other systems measure the fulfillment of targeted sales volumes controlled at headquarters on a monthly basis, pushing distribution to deliver on the budgeted production quotas. This budget reporting is presented to the board of directors in the company on a monthly basis and needs sign-off and approval. These reporting systems are used for quarterly or semi-annual business reviews with managers in distribution.

The business reviews spend most of the time discussing current performance with only little consideration for strategic concerns like resource allocation for business development. The monitoring approach is visible from use of very detailed indicators in an IT-based administrative system aimed at creating transparent monitoring of the performance in distribution.

As a vice president at headquarters (interview 67) said: “the company started to identify the customer as the biggest value really late [..] you need the numbers to understand where we are – but it should be 10/90 percent of time and not the other way around [..] we need to talk more about business and less about financials.”

A local sales director (interview 49) characterized the sales planning and follow-up meetings in the following manner. “When someone will not reach the RVP [sales volume planning] … He will be killed. Because there is no reason – okay. There is no reason for which you say you cannot reach the RVP”. Relating to the same topic a country director (interview 61) described it [sales planning] as ‘a one way dialogue’ arguing that it should be labeled JFDI [just fucking do it].”

A financial manager at headquarters (interview 2) explained: “we have a lot of controllers in our company. But still, what is our opinion on ourselves? [..] And it's not about like 10 years ago, just control the figures and just tell the sales guys, your costs are too high, your volume is too less, whatever.”

A country manager (interview 61) argued: “the factory basically has a very linear mentality to planning. And your market share will always be at 10%. They have little or no concept to the vagaries and the dynamics in each market. They want a very simple view. And, therefore, they don't like change.” This is further elaborated by a country MD (interview 66): “I would say over-control it, because [we] constantly have on a monthly basis or weekly basis performance troubles with the various business units, trucks, bus, van controlling obviously. And the country's big boys [MD and FD][..] get treated like in a kindergarten … the issue is that they have youngsters from the universities, highly intelligent people with no experience at all and they bombard you with Excel sheets to be filled to prove that what you are doing.” Internal company surveys display the same pattern of many KPIs that fail to capture the country complexities.

On the issue of headquarters’ understanding of the downstream business a senior vice president (interview 33) explains, “in [HQ], there is very, very few if any who understand retail. They don't understand that. They think they do, but they don't, and that's a very, very big strategic problem, and that starts with the top. Also the top management of the company, they don't understand it. Then when you come down to the [countries], there are some [countries], especially the smaller ones [..] they do understand retail, but if you take the larger ones like

[country, country], they don't. [..] if you go down to the people who work in retail, then they do understand very well, [..] there are islands of excellency within the company."

Third aggregated governance dimension

The third aggregated dimension relates to a characterization of the governance of forward integration into downstream distribution activities, displaying low entrepreneurial efforts to deal with the complexity of the value proposition and customer needs in the market. This dimension relates to two theoretical themes.

The sixth (1st order) governance theme relates to the use of authority by upstream headquarters to coordinate targets and drive efficiencies in the integrated distribution, so as to achieve aggregated targets. The collected data clearly demonstrates that decision power and formal authority resides with upstream manufacturing at headquarters, controling resources by possessing the property rights to them (Alchian, 1989; Grossman and Hart, 1986; Hart and Moore, 1990). The use of formal authority at headquarters is visible when targets are delegated to distribution, in addition to decisions on operational issues in distribution are made to secure coordination and fulfillment of headquarter priorities. Whereas managers in distribution that hold specific market knowledge should obtain some degree of real authority, this is suppressed by applying formal authority at headquarters (Aghion and Tirole, 1997; Fehr et al., 2013; Williamson, 1975). This position of authority is also used to direct discussions at business reviews towards short-term target fulfillment. As a consequence, headquarters remains ignorant about the operational competences and market specific knowledge that resides in the downstream distribution entities. The use of formal authority from holding property rights becomes very visible in the following statements.

A market finance director (interview 52) describes the delegation of top-down ambitious budgets as a tool to retain central authority: "[the Company] is for me very unsophisticated [..] in that they still use the budget as an authoritarian tool. [..] you've got too many of these people that are spreadsheet driven, traffic light driven, and are just box tickers. They don't understand the business."

One country managing director and head of internal sales (interview 19/20) refers to the planning process stating that "parts volumes, parts margins, warranty, goodwill, sales pricing,

sales margin: it was all set from the center [HQ]" and the budgeting process is described as "we didn't have an agreement. We had a dictate, but we had to achieve it."

Another country managing director (interview 44) refers to the targets given in the yearly budget round: "I was on holiday. Different time zone. It was late at night. I received a phone call. I didn't pick up. I receive it again. And again, and again, and again. So I said, 'okay. Now I pick up, in the middle of the night.' The caller [from HQ] said: 'I know you are on vacation, but you have now six hours' time and you put the figures in the system.' I responded 'okay. Why should I do so? Because we will never achieve it.' [HQ caller]: 'because I tell you so.' [MD] 'hmm, yeah, but this is not what will happen. We have to work on what will happen." He [MD] continued: 'okay. But I still need to have this in writing from you. Because otherwise, I won't do it.' The reply [caller from HQ] was: 'if you do not do this [now], think about your last days in the company'."

The headquarters' lack of consideration for downstream activities is visible from the views expressed by a financial manager (interview 2). He said that "production has the power to tell distribution, we need to produce 'x' amount of vehicles to be efficient, so please go sell." This becomes very tangible when a sales product manager (interview 36) describes a technical problem causing an eighteen months production stop on a model range that make up almost 20% of the country sales where the message from HQ was to "replace the [lost] volume with something else."

"They are all protecting their own personal positions rather than looking at it in the bigger picture," as one country managing director (interview 61) put it.

Accordingly, a country manager (interview 11) described himself as an "overpaid maid" with responsibility but no authority.

The seventh (1st order) theme relates to distribution's incentives to contribute to the total value offering from personal entrepreneurial engagements. When successful value adding activities build on intangible resources and capabilities that are different from those of the integrating manufacturer, it requires delegation of power to economize on idiosyncratic capabilities and resources (Bering 2020a; Connor and Prahalad 1996; Demsetz, 1988; Gereffi et al., 2005, 2018; Jensen and Meckling, 1990; Nooteboom, 2004; Story, 2017; Teece, 2010). This means that observing and incentivizing based on KPIs related directly to output (Alchian and Demsetz, 1972; Lafontaine and Slade, 2007; Lazear and Gibbs, 2014) becomes increasingly

difficult. To prevent that personal efforts are not carried as unrewarded costs or appropriated by the property right holder (Eccles, 1985; Grossman and Hart, 1986; Holmström and Tirole, 1991; Woodruff, 2002), the headquarters needs to establish measures to internalize and reward these efforts (Fehr et al., 2013). If this is not pursued, the entrepreneurial engagement in distribution will be diluted (Lafontaine and Slade, 2007; Oliva and Kallenberg, 2003; Oliva et al., 2012). The Case Company clearly suffers from this lack of downstream entrepreneurial effort.

As a vice president (interview 33) put it: "I think it has to do with the focus from the factory, from [HQ], has not been on retail. It has been on selling as many trucks as possible and selling as many parts as possible. So the wholesale people in the [countries], they have really been acting as wholesalers." One sales director (interview 23) explains that if your deliver on sales volume, you have *"speaking time"* at headquarters and is more legible for future promotion.

A sales director (interview 22) argued: "if it would be my company, I would focus much more on the customer and, especially on the staff side because, here, I would say that in the long run these are the two elements which are heavily impacting of course the volume and the monetary side. And then, in our daily steering, we are focusing always on the volume side. [..] We are hunting the volume, and we are acting short term, but staff and customer is basically, in my eyes, a contradiction because here you have to work extremely long term. But we are always very short-term focused." A senior vice president at headquarters (interview 33) expressed it like this: "so it's not its own profit center. And it still isn't. Because many of our [countries] they have a minus in their business. And that means that every extra truck they sell, they have a worse result. Which is of course a terrible situation for the people in the [local countries] who have a bonus on the result of the [local] company. [..] Because that's the demand from headquarters. [..] They have the demand to put out as much volume as possible and the demand is not to build the image and brand." This governance approach is also visible in the priorities expressed by a country manager (interview 22): "we are pushing so hard the volume side, it has a negative effect on the staff and sometimes, and unfortunately, also on the customer."

Another country MD (interview 13) addressed his own authority by looking at the fact that countries loosing hundred thousands of Euros on large deals are forced to lay-off people to save on fixed costs. He explained "you're actually allowed to do the deal to lose the money, but you're not allowed to keep your people to build up your company. And, again, this is what we came back from the very beginnings of governance of how you want to create a competitive

advantage in the local market, and where is the market going and stuff like that. […] [the HQ said] 'Shut up, do what we say, fire your people. We don't care.' I don't see the logic all the time, honestly. I really struggle with that sometimes, and I close my door and stand and look out of the window."

A country finance director (Interview 14) describes the incentive structures this way: "one third is targets that they can change themselves. Of these targets, we have profitability which only can partially be influenced locally. You have market share which also you can argue can only partially be influenced locally because we have a lot of — it depends on transfer price in the products you're getting. So I would say that the local performance and that is a complete estimate from my side is maximum 5 to 10% of the whole incentives they're getting. So 90% is out of their [country MD, FD] hands so they do not reject … because it doesn't matter anyway". He elaborates further: "If you are not paid to optimize your business, and if you do that [ignore optimization] over consecutive time of years, you will not find many entrepreneurs in your ranks of MDs."

While the Case Company initially addressed the integration challenges by pushing the need for sales volume to ensure economies of scale, it is surprising to find broad managerial recognition that the company must become more customer oriented. However, the ability to perform such a transformation has proven extremely difficult.

DISCUSSION

This article has investigated into the governance of forward integration from manufacturing towards sales and distribution with complex value adding activities. The nature and complexity of the activities undertaken by distribution has implications for the decision to integrate forward and the way the integrated firm subsequently governed. Empirical studies argue for forward integration if it will improve the monitoring of agent efforts, and thereby reduce moral hazards (e.g., Anderson and Schmittlein, 1984; Brickley and Dark, 1987; John and Weitz, 1988; Kalnins and Lafontaine, 2013; Kosová et al., 2013). However, as mutually dependent resources and capabilities along the value chain (Nooteboom, 2004; Spring and Araujo, 2013; Teece, 2010) assume higher degrees of plasticity, output based metering is no longer sufficient to ensure

engagement of value-adding efforts; other approaches must be considered to create the needed incentives as well. This includes situations where downstream entrepreneurial efforts are important due to increasing product complexity and dynamic market changes close to end-users (e.g., Baines and Lightfoot, 2014; Brickley and Dark, 1987; Baker and Hubbard, 2004; Lafontaine, 1992; Woodruff, 2002).

Empirical studies (e.g. Benedettini et al., 2015; Gebauer et al., 2005; Harrigan, 1986; Visnjic and Van Looy, 2013; Visnjic et al., 2016) note how manufacturing firms struggle to turn forward integration into improved business performance when this incorporates downstream advanced value adding activities. Under these conditions, some studies speak for segregated ownership of sequential business activities because independent distributors are incentivized to respond to market needs as the residual claimants to their own entrepreneurial efforts (Grossman and Hart, 1986; Kosová et al., 2013; Lafontaine and Raynaud, 2000; Lafontaine and Slade, 2007; Silverman and Ingram, 2017; Woodruff, 2002).

However, the Case Company's decision to integrate forward was an attempt to resolve the incentive misalignment (Klein, 1995; Pindyck and Rubinfeld, 2009; Riordan, 2008) with independent distributors engaged across Europe after major external market shocks in the early 1980s. These market events led to significant loss of sales where the company now had to rely on independent and often financially weak importers and distributors. As the company had enjoyed a competitive advantage from superior engineering and manufacturing capabilities in the past, the governance of downstream distribution was aimed at securing volume and scale economies rather than developing competitiveness by exploiting downstream resources and capabilities (Baines and Lightfoot, 2013; Nooteboom, 2004; Spring and Araujo, 2013; Teece, 2010; Thompson, 1967). Any distribution costs that could not be accounted for to support scale economic efficiency were considered unnecessary and distribution efforts prioritized the achievement of sales volume. The focus on scale economies as the predominant view of the manufacturing headquarters as the center of gravity (Galbraith, 1983; Ilinitch and Zeithaml, 1995) permeated the entire organization including the downstream distribution activities. This urge to capture the advantages of *industrial organization governance* was expressed as a sales-push oriented culture in the integrated distribution with manufacturing showing little receptiveness to insights from the downstream entities.

While forward integration partly resolved the incentive misalignments and double marginalization between adjacent activities (Eccles, 1985; Riordan, 2008) other issues related to asset plasticity and moral hazards (Anderson and Schmittlein, 1984; Brickley and Dark, 1987; Kalnins and Lafontaine, 2013; Lafontaine and Slade, 2007) became serious concerns. With forward integration, the final revenues were now booked outside of manufacturing closer to end-user market, thus exposing the revenues to moral hazards among distribution managers shirking or appropriating perks that are difficult to monitor. Prior experiences established the perception at headquarters that distribution 'burned cash' to protect market share by giving discounts that are hard to monitor given the asymmetric market information. This meant that rather than letting the distribution entities be residual claimants to returns from their own investments and efforts, initiatives were taken to ensure a *cost efficient distribution*. To hedge against moral hazards, the manufacturing headquarters assumed the formal role of profit center despite internal mandatory transfers (Eccles, 1985) to extract profits from the integrated distribution using the transfer pricing methodology. Extracting profits from distribution also meant that other governance mechanisms had to be implemented to reduce incentive misalignments. This included coordination of volume targets through top-down planning (Thompson, 1967), monitored by an array of diagnostic control systems (Simons, 1995) using KPI's and business review meetings to focus on sales and short-term efficiency gains. While customer surveys were conducted in attempts to establish a stronger customer satisfaction orientation, sales performance always took first priority to ensure the advantages from industrial organization governance.The case study illustrates how a manufacturer's move towards forward integration in a complex distribution context can prove challenging. Manufacturer's forward integration can offer long-term competitive advantages (Lightfoot et al., 2013); however, this strategic move often requires sacrifices in short-term performance (Suarez et al., 2013; Visnjic et al., 2016). When a manufacturer integrates forward, it is generally assumed that responsibility for the distribution activities is taken over by the manufacturing acquirer (Mathieu, 2001; Spring & Araujo, 2013). This can work when the downstream value adding activities are very basic, whereas the integration of complex value adding activities makes things increasingly complicated (Bering, 2020a; Gebauer et al., 2008; Neu and Brown, 2005).

An increasing body of literature is addressing how manufacturing firms can offer advanced services (e.g. Baines and Lightfoot, 2014; Baines et al., 2017; Kindström and Kowalkowski, 2015; Neely, 2008; Oliva and Kallenberg, 2003; Vandermerwe and Rada, 1988; Wise and

Baumgartner, 1999) but does not consider the governance of long-linked interdependencies between manufacturing and the downstream activities. It is somehow assumed, that profit opportunities from advanced services in downstream business operations can create the necessary focus and corresponding incentives by detaching it from the production of tangible products that now takes more a supporting role (e.g., Baines and Lightfoot, 2013, 2014; Bustinza et al., 2015; Gebauer et al., 2005; Oliva and Kallenberg, 2003). By advocating forward integration to be structured as independent profit centers, this literature does not consider the importance of contractual partnerships to manage the interdependencies between manufacturing of tangible products and intangible value adding services.

Creating a competitive advantage from forward integration into complex distribution implies a close relationship between the tangible product and intangible value adding activities that lead to differentiation and improved customer relationships (Bustinza et al., 2015; Lightfoot et al., 2013). This includes balancing innovation in customer offerings across upstream manufacturing and the integrated distribution activities where idiosyncratic resources and capabilities (Nooteboom, 2004; Story, 2017; Teece, 2010) interact with customers for successful implementation (Kindström and Kowalkowski, 2015; Story et al., 2017). The Case Company has clearly failed to promote the internal strategic objectives that promote downstream value adding activities with internal incentive systems that align the behavior of integrated distribution and manufacturing that often is product driven (Baines et al., 2009; Reinartz and Ulaga, 2011).

Studies that adopt an incentive perspective suggest that forward integration into complex distribution, with more advanced value adding downstream activities, should be governed through market contracting. This is because the plasticity of assets and resources makes monitoring and accurate incentives difficult to institute (Alchian and Woodward, 1988; Lafontaine and Slade, 2007; Raynaud and Lafontaine, 2000). Under complex distribution where the downstream distribution activities face multiple interdependent tasks, e.g., combining selling and services activities, Neu and Brown (2005) advocate a specific integrated structure to cope with the complexity of markets. Here the employees must act as trusted advisors in two-way learning relationships with customers using diverse knowledge to implement solutions and solve customer problems (ibid). For the integrated distribution, this creates a multitasking environment where the balancing between the manufacturer's interest and development of services can provide cover for moral hazards and misappropriation of tasks (Baker and Hubbard, 2004; Holmström and Milgrom 1991, 1994; Shepard, 1993; Slade, 1996). The Case Company

has clearly tried to contain the potential moral hazards by imposing planned efficiencies in a controlled environment, ensuring the proper prioritization of downstream distribution tasks while failing to prioritize incentives to incentivize entrepreneurial effort of the distribution.

The manufacturing headquarters of the Case Company imposed a stringent planning regime with diagnostic controls exercising its formal authority through property rights (Aghion and Tirole, 1997; Alchian, 1989; Grossman and Hart, 1986). The integrated distribution did not operate as a profit center, so its managers had to prioritize the delegated tasks over development of their own resources as the headquarters reinforced its authority (Simon, 1951; Williamson, 1975). Hence, the prioritization of observable sales volume and revenue targets became the benchmark for evaluating country performance. This unfortunately came at the expense of developing difficult to observe investments in customer relationships (Baines and Lightfoot, 2013; Lightfoot et al., 2014) because distribution managers were not rewarded to prioritize this effort (Eccles, 1985; Grossman and Hart, 1986; Holmström and Tirole, 1991; Lazear and Gibbs, 2014), leading to *low entrepreneurial efforts*. The incentive perspective uncovered in relation to the entrepreneurial efforts of advanced downstream activities differs from the servitization literature (e.g., Oliva and Kallenberg, 2003; Gebauer et al., 2005; Baines et al., 2009) and offers an important complementary perspective. By considering the ratchet effect of the increasing efficiency targets delegated the distribution from a property right perspective (Grossman and Hart 1986; Hart and Moore, 1990), this can be understood as manufacturing's internal opportunism advancing own incentives. The cost of this is of course diluting the difficult to delegate and monitor entrepreneurial effort of the integrated distribution (Tirole and Holmström, 1991). Separating advanced downstream activities in profit centers with higher operating autonomy will release distribution from the formal authority exercised by manufacturing for their own benefits (ibid). Governance of reciprocal interdependencies between manufacturing and distribution must therefore enable mutual adaptation to reciprocal interdependencies (Neu and Brown, 2005; Thompson, 1967). In short, the governance regime adopted by the Case Company reflects the integration rationales advocated by the firm boundary literature under directional distribution, but does not satisfy the requirements of a complex distribution context.

CONCLUSION

This study provides deeper insights into the conflicting economic rationales that guide a manufacturing firm's decision to integrate forward, their influence on subsequent governance choices, and the performance effects on the combined enterprise. By considering forward integration in the context of complex distribution that depicts contemporary markets conditions, as a contrast to directional distribution, the study uncovers how the governance approach leads to different incentive misalignments as discussed in the literature. Moral hazard theory is a dominant perspective in the analyses of forward integration where other economical rationales address issues of incentives, double marginalization, and scale economies. These issues are easier to resolve in a directional distribution context but as distribution activities increasingly depend on specific assets, specialized knowledge-based capabilities and entrepreneurial efforts, the required organization structure, and governance mechanisms become more complex and challenging.

The data collected from the case company supports these contentions, illustrating the obscure and different demands that the forward integration decision imposes on a manufacturing firm where contrasting boundary rationales impose governance tradeoffs. In the Case Company, the center of gravity at the manufacturing headquarters consolidates property rights and formal authority as a profit center that delegates sales targets, expense budgets, KPIs, and required investments to satisfy the need for scale economies. It is of primary importance to reach the sales targets that will ensure the economic efficiencies of manufacturing. Hence, the headquarters uses its authority to 'ring-fence' manufacturing and shield it from market turbulence, ensuring fulfillment of optimal production targets exercising property rights to decide on the use of downstream distribution assets. The fact that independent distributors outperform the integrated distribution entities on value added sales, customer satisfaction, and loyalty supports this interpretation. It also shows the inefficacies of the adopted governance approach in a complex distribution context. The study also illustrates the balancing concerns faced by manufacturing firms, between delegating authority to downstream managers to drive innovation in advanced value adding activities, and control to contain the exposures to moral hazards. The study also shows that attempts to seize short lived economic opportunities can be costly when the requirements of downstream activities change. By adopting a governance perspective driven by economic integration rationales, this study adds to our understanding of

why a manufacturing firm's decision to integrate forward into advanced services can prove very difficult, as also observed in the growing literature on the servitization phenomenon.

We believe the study makes several contributions both to theory and management practice. The various economic rationales, often referred to as "theory of the firm", still remain a fertile area. This relates to how different theories react either in conflict or concert to the integration of different contextual activities. These implications relate especially with respect to the establishment of sequential profit centers, where incentive conflicts between entrepreneurial opportunity and opportunism among different stakeholders take center stage. The growing servitization literature is another stream of research that accentuates these tensions. Manufacturing firms need to carefully evaluate uncertainty of final markets and the role of the distribution, both in the short-term but also long-term, to assess if integration will restrict downstream dynamic capabilities. The servitization literature has long advocated separating downstream business activities into an independent profit center. As this study shows, integrated downstream business activities will create a new final point of revenue and profit which awakens different aspects in relation to delegation responsibility and authority. This study takes a step back from the potential benefits ascribed to advanced value adding activities, considering how the economic integration rationales with adopted structures and incentive systems affect the delivery of proposed downstream advantages. This has also direct implications for practitioners who must govern and manage the forward integration decisions to advance competitive advantage. Top management must carefully assess the context of the distribution activities and consider how the context influences entrepreneurial behavior and internal opportunism. Failing to do so, can lead to high coordination costs when the decision to integrate forward is based on one set of economic integration rationales without considering other, conflicting perspectives that would caution against integration. The path to divesting integrated activities might prove even more costly when vital resources and capabilities have been diluted by corporate ownership.

The study has some obvious limitations. While case studies allow in depth exploration of contextualized governance approaches, they are also limited in their ability to generalize findings. Since this study is a single case study of forward integration, it provides deep insights into the governance choices made by a representative organization with related structures, systems, associated costs, and benefits. The methodology adopted a theory guided inductive (or

abductive) approach to investigate the long-linked governance mechanism, following a forward integration decision in a major manufacturing firm. Utilizing a different theory guiding approach or a purely grounded research method might reveal other internal structures and governance mechanisms that affect subsequent performance, but that was beyond the scope of the current study. This also makes it relevant to ask how the Case Company would have performed if it had not embarked on an aggressive strategy of forward integration. While that is beyond the scope of this study, data from one major European national market where the Case Company did not integrate forward suggests that forward integration does boost sales performance in terms of units. In this market the Case Company realized a lower market share than in any of the other integrated markets of comparable size. The interplay between defining firm boundaries with related structures and governance challenges remain a highly relevant topic for contemporary manufacturing firms, one that requires more research to inform executives that contemplate forward integration to incorporate value-adding services.

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Appendix. Table 2. Research protocol questions

Question nr.	Generality question	Value chain position	MD	FD	SD	ASD	Marketing/Product man	Primary question
1	1. Knowledge/delegation/s	HQ / Distribution	x	x	x	x	x	Are there any resources, capabilities or specific knowledeges along the value chain, that you would regard essential to success for the company as a whole?
2	1. Knowledge/delegation/s	HQ / Distribution	x		x	x	x	How does the company consider and integrates competences/knowledge between business units downstream to upstream?
3	1. Knowledge/delegation/s	HQ / Distribution	x	x	x	x		What is the formal status of your business unit (profit center, cost center, revenue center)
4	1. Knowledge/delegation/s	HQ / Distribution	x	x	x	x		How are goals and targtes delegated??
5	1. Knowledge/delegation/s	Distribution	x	x	x	x	x	Since you work in the "distribution" - what would you consider your prime objective as being? Is your focus on efficiency or value enhancing activities like "raising customers willingness to pay more"
6	1. Knowledge/delegation/s	Distribution	x	x	x	x		Are the specific targets delegated your business unit realistic ?(e.g., revenue, profits, units, market share, customer satisfaction targets, head counts, processes)
7	1. Knowledge/delegation/s	Distribution	x	x	x	x		What would happen if you said e.g. "I don't want to do that in my market - it will create a long term disadvantage"?
8	1. Knowledge/delegation/s	HQ / Distribution	x	x	x	x	x	How would you describe coordination between business units?
9	2. Incentives and pricing of internal transactions	HQ / Distribution	x	x	x	x		How is the price of the intermediate goods/service transferred between HQ and distribution determined
10	2. Incentives and pricing of internal transactions	Distribution	x	x				What happens to the profits generated inside Business Units - are they able to keep theese inside the BU and reinvest and recieve a bonus from the internally created results or are they appropriated by head quarters?
11	2. Incentives and pricing of internal transactions	Distribution	x	x	x	x		Do you achieve all your targets?
12	2. Incentives and pricing of internal transactions	HQ / Distribution	x	x	x	x	x	How are your incentive designed? (Strong personal performance? Or more aggregated and collective?)
13	2. Incentives and pricing of internal transactions	Distribution	x	x	x	x	x	If you have multiple tasks - how do you prioritize your goals (are there any "must" fulfill!)
14	2. Incentives and pricing of internal transactions	Distribution	x	x	x	x		Do you percieve the pricing of the intermediate products to be fair?
15	2. Incentives and pricing of internal transactions	Distribution	x	x	x	x	x	Do you experience other business units making decisions which imposes costs on your busines unit?

Appendix. Table 2. Research protocol questions (continued)

Question nr.	Generality question	Value chain position	MD	FD	SD	ASD	Marketing /Product	Primary question
16	3. Authority use and monitoring of performance	Distribution	x		x	x	x	Would you consider youself better informed about the market and its requirements than your boss (and his boss) ? Do they sometimes make decisons which seems irrational form your point of view ?
17	3. Authority use and monitoring of performance	Distribution	x	x	x	x		If you are the manager/responsible of a BU – how much authority is delegated to you – can you object (dismiss) these targets?
18	3. Authority use and monitoring of performance	Distribution	x	x		x	x	Do yo think any of the targets delegated are more important than others? -- why?
19	3. Authority use and monitoring of performance	HQ / Distribution	x	x	x	x		Does the headquarters use formal authority to delegate goals and prioritize effort?
20	3. Authority use and monitoring of performance	Distribution	x	x	x	x		Does your owner "use you" (i.e., excercising authority over the actions of your BU and your staff)
21	3. Authority use and monitoring of performance	HQ / Distribution	x	x	x	x		How is performance monitored?
22	3. Authority use and monitoring of performance	Distribution	x	x	x	x	x	How do you prioritize effort? (Using diagnostic control/KPIs or Guidance systems; core values, customer relationships ect)
23	4. Innovation and organizational dynamics	HQ / Distribution	x		x	x	x	How do your consider overall "company" innovation (how competitive is the company as a whole) e.g. Using specific knowledge between different units to function/cooperate?
24	4. Innovation and organizational dynamics	HQ / Distribution	x	x	x	x		What is the purpose of the company's Forward Integration? (Does it create any value like differentiation to product or is the focus on cost-savings – (Does Forward integration play a role in the business model??
25	4. Innovation and organizational dynamics	HQ / Distribution	x		x	x	x	Looking at the overall value-chain of the firm: "Does the company have any driving force inside the organization"? – (Anything inside the value-chain which the firm consider essential to it's existence, focus ect?
26	4. Innovation and organizational dynamics	HQ / Distribution	x		x	x	x	How open is the "driving force" to cooperation across different business units? Different inputs/needs/suggestions (product needs, improvements), changes in the market?
27	4. Innovation and organizational dynamics	HQ / Distribution	x		x	x	x	If the company were to sell only trough market transaction – do you think that the firm would have adapted better to uncertainty and changes?
28	General Performance Evaluation	HQ / Distribution	x	x				Looking at general numbers like ROS, ROE; ROA; How would you estimate the performance of the company as a whole?
29	Integration costs	HQ / Distribution	x	x	x	x	x	Does integration give the compay any disadvantages? Which (does integration actually neutralize a market which could be correctional?) Or, has the takeover actually diluted any competencies/advantages?
30	Integration rationales	HQ / Distribution	x	x	x	x	x	Does Integration give the compay any advantages? – Which?

CHAPTER 5:

FORWARD INTEGRATION IN MANUFACTURING:

A COMPARATIVE CASE STUDY OF GOVERNANCE MECHANISMS

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ABSTRACT

Forward integration from manufacturing to distribution presents opportunities to grow and improve profitability. The realization of economic advantages requires proper coordination of vertically linked business activities that improve the competitiveness of final products and increase operational efficiencies. Forward integration can extend the business potential but may also impose costs from imperfect contractual arrangements as displayed by significantly different performance outcomes of companies that pursue integration strategies in the same industries. Hence, there is a need to understand how the downstream value adding activities in forward integration can (or should) be governed to create value. To this end, we analyze two large international manufacturing firms that pursue a forward integration strategy and compete for similar customers in the same markets but with very different outcomes. The less profitable company exercises a governance regime where manufacturing controls distribution, monitors job design, and retains all residual profits. The consistently more profitable company integrates the downstream distribution activities to explore market opportunities and enhance profits from value-adding initiatives in the forward business entities. We compare the practices pursued by the two companies and note the influence of the distribution context when setting up a proper integration governance structure. Hence, forward integration with the primary purpose to satisfy scale economic advantages in manufacturing is questionable in complex market contexts whereas forward integration that provides flexibility and incentives to create downstream value outperforms on several dimensions.

Key words: Coordination, Corporate strategy, Forward integration, Incentives, Innovation, Multitasking.

INTRODUCTION

A forward integration strategy from manufacturing into distribution with extended sales and service offerings creates opportunities to generate competitive advantage and increase performance but this does not come about without major challenges. The evidence on post integration performance is ambiguous at best and shows how difficult it is for contemporary manufacturing firms when they adopt a growth strategy by expanding business activities closer to the market (e.g., Gebauer et al., 2005; Neely, 2008; Suarez et al., 2013). Scholars like Porter and Livesay (1971) and Chandler (1977) observed that production companies integrate forward when existing marketers fail to sell the quantities they produce and provide adjacent value-adding services like maintenance and repairs. It was further described how vertically integrated corporations developed to gain scale economic advantages and increase market power (Chandler, 1977). Hence, a forward integration strategy can improve the competitiveness of product offerings (e.g., Baines et al., 2007; Lightfoot et al., 2013; Oliva and Kallenberg, 2003), reduce transaction costs, and enhance production efficiencies (e.g., Arrow, 1975; Chandler, 1977; Coase, 1937; Williamson, 1971, 1975).

However, moving forward into distribution and sales can stretch the existing manufacturing capability because the "capability lies upstream from the end product … which might find a variety of final product applications" (Teece, 1982, p. 45). So, while an integrated manufacturing firm is engaged closer to the final users, it may not be able to absorb the updated market intelligence and adapt the product features to the changing demands (e.g., Galbraith, 1983; Jacobides and Billinger, 2006; Lafontaine and Slade, 2007; Porter, 1980). All the while, D'Aveni and Ravenscraft (1994) found that both backward and forward integration are associated with higher production costs because increased market power reduces the positive efficiency effects of competitive pressure. Ilinitch and Zeithaml (1995), Neu and Brown (2005), and Benedettini et al. (2015) further observed that a lack of managerial understanding about the adjacent industries exposes the forward integrated firms to higher bankruptcy risk in turbulent environments. These findings illustrate that the empirical evidence with respect to the realization of positive net effects from forward integration is rather varied and indeterminate.

This motivates a number of relevant and timely research questions: Why do some manufacturing firms realize poor performance after they integrate forward while others consistently outperform their peers in the industry? What are the characteristics of the adopted

governance structures that can explain the observed divergence in performance of forward integration? How can we support contemporary manufacturing firms in decisions to integrate forward and their aims to govern ex post integration successfully? We attempt to answer these questions by exploring two representative forward integrated manufacturing firms, a low performer and a high performer respectively, through individual and comparative case analyses. We present two contrasting environmental contexts, directional and complex distribution, and use the insights from theoretical and empirical literatures on forward integration to guide the data collection and support the analyses of downstream business integration. We present the research methodology, provide information on the industry followed by detailed case analyses and derived findings. Finally, we discuss the results and implications for management practice and future research on forward integration.

BACKGROUND

The analysis of forward value chains will benefit from a deeper understanding of the role assumed by distribution and the relationships to upstream manufacturing. If the manufactured products cannot be applied directly in an adjacent industry, but need further modifications before they can be sold in final downstream markets, the efforts and investments made by distributors require closer coordination with the upstream manufacturer. Hence, forward integration from manufacturing towards distribution activities requires new coordination mechanisms along the value chain that must be governed effectively to enhance economic efficiencies and sustain performance.

Forward integration from manufacturing towards distribution, sales, and services imposes new requirements on corporate management to deal with the potentially complex interdependencies between the linked activities along the value chain (Figure 1). In an open market context, the coordination of activities is cleared through spot or forward contractual transactions between economic entities (or firms) with independent ownership that seek to operate effectively and efficiently for own profit. When these activities come under the same hierarchical ownership, the corporation must be able to coordinate the internal business activities in ways that provide effective product offerings to the end-users and with higher efficiencies than offered by pure market transactions. This introduces a conundrum between two

fundamental priorities: (1) reducing transaction costs and gaining scale economic efficiencies with superior use of resources and capabilities, and (2) creating incentives to satisfy the diverse and changing demands of end-users to form customer loyalty and allow premium pricing. These dual concerns are not easy to accommodate simultaneously because market responses require entrepreneurial engagement of many agents across manufacturing and distribution with information exchanges in feedback and feedforward loops, which contravenes standardized routines imposed to gain efficiencies.

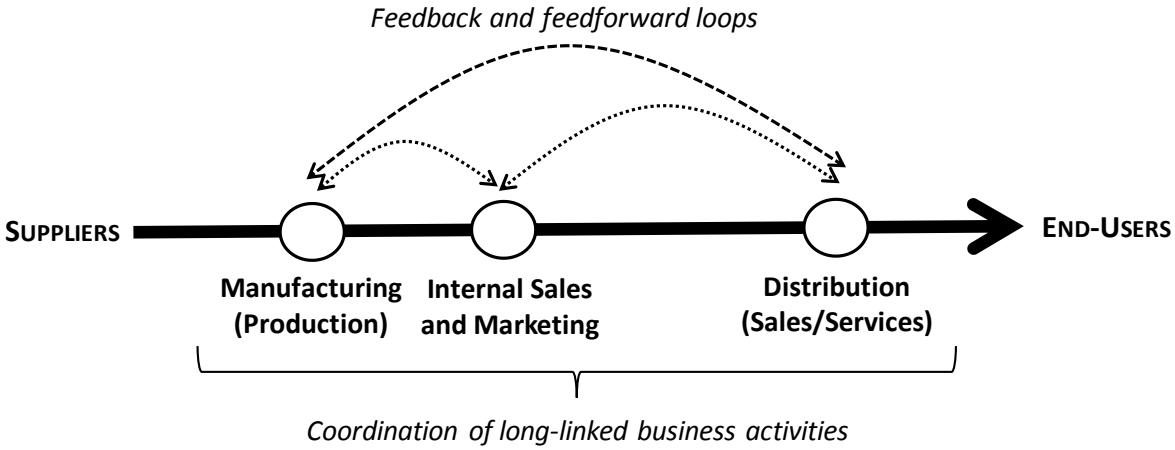

Figure 1. A Sequence of Linked Activities in the Forward Integrated Value Chain

The complexity of developing, producing and distributing the right products and services for end-users affects the ability to codify sophisticated processes, information, and knowledge along the value chain (Gereffi et al., 2005, 2018) and formally coordinate activities between manufacturing and downstream distribution. The higher the degree of complexity, the more challenging it becomes to standardize and control internal processes whereas the interdependencies between different value chain activities rely increasingly on balanced incentives supported by common values and behaviors. This identifies two different integration typologies, *directional* and *complex* distribution (Bering, 2020a), that can serve as frames to understand the interdependencies between manufacturing and distribution activities and the implicated challenges of forward integration. We introduce these two informative distribution contexts in the following.

Two distribution typologies

The *directional distribution* context applies to situations where the upstream manufacturer's intermediate product requires no or only minimal alterations (tangible or intangible) by the distributors before being sold in downstream markets to final users. The important element to stress here is that the alterations undertaken by distributors can be codified by the manufacturer through standardization, including additional product specifications and add-on services, and planning of specific investments designed to increase product value and increase efficiency. It resembles a so-called captive governance approach (Gereffi et al., 2005, 2018) and the conditions of traditional franchise arrangements specified in formal contracts. The long-linked and interdependent activities along the value chain are built around the manufactured product where the ability to create rents from superior product features attract investments in downstream distribution. The role of the distributors is to provide an efficient distribution channel for the manufactured product. The transformation distance from production to the final users is low with little information asymmetry between manufacturing and distribution about current market demand and customer needs. This means that the manufacturer knows the key drivers of purchase decisions and product distribution, which makes it easy to monitor the efforts of the distributors.

When the manufacturer has the entrepreneurial responsibility for economic results, the interdependencies between manufacturing and the downstream distribution functions are coordinated through planning and standardization (Thompson, 1967). In other words, in return for having coordinating authority, the manufacturer must offer the downstream distribution partners a profit premium to encourage their specific investments (Klein, 1995). These investments relate to establishing and managing an efficient downstream value chain that must secure the sale of the manufacturer's product. The premium the manufacturer offers to the distributors, and the implied sharing of economic returns, is typically accomplished by setting a sufficiently attractive official selling price for the intermediate goods that allows the distributors to earn a profit. Additionally, the manufacturer can charge the distributors for investment fees and royalties associated with the sales. In directional distribution the instrumental efficiency (Thompson, 1967) is based on contractually defined tangible investments made by the distributor to support the downstream sales efforts. When the rents (premiums) allotted to distribution derive from the manufacturer's superior product and production capabilities, it creates a potential moral hazard if the distributors shirk or free-ride on effort (Anderson and

Schmittlein, 1984; Brickley and Dark, 1987; Lazear and Gibbs, 2014). This makes self-enforcing contracts a preferred governance tool because these types of contracts create fear among the distributors of possibly losing their share of the manufacturer's profits (Klein, 1995; Lafontaine and Raynaud, 2000).

The *complex distribution* context applies to situations where the downstream sales of the manufacturer's product to the end-users require additional product transformations in the form of tangible or intangible adaptive activities to satisfy customer demands (Bering, 2020a; Gereffi, et al., 2005; Lightfoot et al., 2014; Mathieu, 2001;). This could constitute specialized versions of the core product as well as different specialized after-sales services like maintenance and repairs where these activities are of high importance. In this context, the coordination between the manufacturer and the distributors is complicated because specialized information, resources and competences are contained more evenly between the long-linked business activities (Thompson, 1967). The specialized product and production knowhow resides in manufacturing whereas important market and end-user knowledge is located in distribution. This location of knowledge is particularly pronounced in business-to-business environments where catering to final customers in downstream markets requires additional tangible and intangible investments in the distributors' sales and service activities. This means that the manufacturer and the distributors must engage actively to fulfill the more complex customer needs working together to increase the combined profits as opposed to restricting competition through strategic maneuvering (Porter, 1990). The role of downstream distribution as a bridge between the manufacturer's product and the complex needs of the final customers requires frequent interactions among specialized agents along the value chain to coordinate the long-linked activities. These interactions depend on intangible capabilities that again hinge on the engagement of individual knowledge, insights, skills, competences, entrepreneurial efforts, etc. (Brown and Neu, 2005; Gereffi et al., 2005, 2018; Lafontaine and Slade, 2007). This implies that unique information is located asymmetrically along the value-chain, which makes it difficult to establish reliable measures and contractual arrangements to govern the interdependencies across long-linked business activities (Thompson, 1967).

The resources and competences needed to manage the value-adding investments in distribution can take many intangible forms including specific knowledge, information, experiences, insights, or an adaptive entrepreneurial mindset. These value-adding elements can

extend the basic features of the manufacturer's product and it can be combined with other products in a portfolio of offerings that the end-users value, which at the same time can create a complex multitasking environment (Holmström and Milgrom, 1991; Shepard, 1993; Slade, 1996). The manufacturer and the distributors try to resolve the challenge of product complexity including interdependent value-adding activities that are difficult to codify and transmit in standardized ways that can secure economic efficiency (Gereffi et al., 2005, 2018). The dispersed location of resources like essential knowledge and competences affects the interdependencies between manufacturing and the downstream distribution functions. These interdependencies are sequential and pooled but also reciprocal and mutually dependent since the upstream manufacturing and downstream value-adding distribution activities rely on each other as sources to the aggregated competitiveness (Thompson, 1967). It is important to manage these long-linked interdependencies effectively, which is particularly demanding in dynamic and rapidly changing downstream markets (Kosová et al., 2013; Lafontaine and Slade, 2007; Baker and Hubbard, 2004; Woodruff, 2002).

The complex distribution context needs entrepreneurial efforts and mutual coordination of interdependent activities that fail to be motivated by the incentives provided in simple rent sharing contractual arrangements as they are applied in a directional distribution context. The contracts for complex distribution must therefore consider the requirements for entrepreneurial efforts and specific investments downstream to secure effective resource deployment that will satisfy the needs of the end-users. The available information about downstream market requirements resides with the distributors, which makes it very difficult for the manufacturer to align and coordinate interdependent activities through planning and standardization. This leaves standard contracts incomplete with certain elements non-contractible (Grossman and Hart, 1986; Williamson, 1979). Hence, the manufacturer must write contracts that make the distributors residual claimants to their own investments and efforts that are important for future returns (Gibbons, 2010; Grossman and Hart, 1986; Lafontaine and Raynaud, 2002).

Sequential and mutually dependent value-chain activities can also create a double marginalization problem (Eccles, 1985; Riordan, 2008; Pindyck and Rubinfeld, 2009) where the optimal product volume disfavors the upstream manufacturing. This is the case under directional distribution where there is misalignment between volume and marginal profits across sequential activities. Under complex distribution this misalignment is mitigated by important value-adding

activities, that make the end-users willing to pay more, from the use of idiosyncratic resources and capabilities located in distribution (Hoopes et al., 2003). To realize this value, the manufacturing headquarters must recognize the value potential of distribution and refrain from appropriating it by increasing the price charged on the intermediate product. The manufacturer can also not exercise control over downstream distributors because the distribution functions have important knowledge about end-users and market conditions while holding the capabilities that can address them (Grossman and Hart, 1986). Hence, the success of forward integration under complex distribution depends on the firm's ability to be service oriented, entrepreneurial, market conscious, etc. (Brickley and Dark, 1987; Kowalkowski and Kindström, 2015; Lafontaine and Slade, 2007; Woodruff, 2002). Under these circumstances, the trust and openness between manufacturing and distribution becomes important to engage individuals along the integrated value chain in responsive actions as market conditions change (Arrow, 1974; Gibbons, 2010; Nooteboom, 2004).

In short, manufacturing firms that contemplate forward integration into distribution and sales must be able to address the high complexity environment they engage when they move from market transactions to internal coordination of business activities (Figure 2). For a theory of the firm to guide decisions on forward integration, it must be able to explain the tradeoffs between internal coordination and market transactions (Gibbons, 2005; Williamson, 1971). However, the available theories often focus on one set of advantages, or costs, while they ignore other ex post merger effects. This is why the distribution typologies may provide useful frames for ensuing case analyses to uncover effective governance approaches.

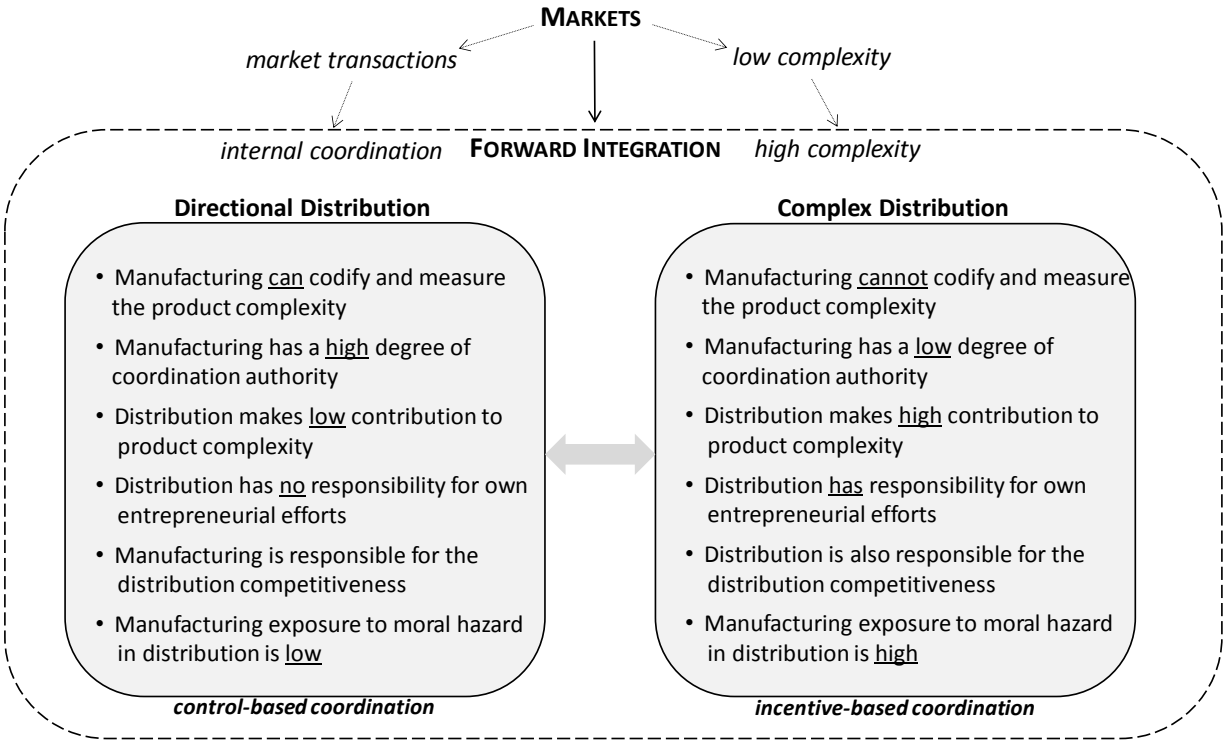

Figure 2. Two Typologies as Distribution Moves from Markets to Forward Integration

Theories of forward integration

Forward integration has been analyzed from different theoretical perspectives including transaction cost, contracting, moral hazards, property rights, incentives, multi-tasking, industrial organization, and evolutionary economics (e.g., Anderson and Schmittlein, 1984; Anderson, 1985; Baker and Hubbard, 2004; Brickley and Dark, 1987; Fan and Goyal, 2006; Kedia et al., 2001; Kosová et al., 2013; Shepard, 1993; Slade, 1996; Woodruff, 2002). Downstream interdependencies can introduce costs due to imperfect information between different actors along the value chain. A transaction cost perspective identifies the associated inefficiencies and costs from opportunistic haggling between the long-linked market actors (Grossman and Hart, 1986; Hart and Moore, 1990; Williamson, 1971, 1979, 1985). The same economic factors can create inefficiencies when the business activities are governed through formal authority in the integrated firm (Alchian and Woodward, 1988; Gibbons, 2005, 2010; Kaplan and Atkinson; 1998; Masten et al., 1991; Rosen, 1991; Woodruff, 2002). The costs of internally integrated transactions derive from different contractual incentives, priorities, and risk propensities of owners and managers, which can lead to undesirable actions and suboptimal behaviors (Alchian

and Demsetz, 1972; Eisenhardt, 1989; Holmström and Milgrom, 1991; Jensen and Meckling, 1976). It is argued that forward integration can eliminate the downsides of market imperfections and asymmetric information to enhance economic efficiencies with a stronger market presence (e.g., Alchian and Demsetz, 1972; Anderson and Schmittlein, 1984; Bain, 1968; Porter, 1979; Williamson, 1971, 1991; Woodruff, 2002). However, if the monitoring of unique downstream efforts is difficult it creates moral hazards as agents can behave for own advantage, which is a caution against forward integration (e.g., Brickley and Dark, 1987; Kalnins et al., 2013; Kosová et al., 2013; Lafontaine, 1992; Lafontaine and Slade, 2007; Shepard, 1993; Slade, 1996). Hence, as manufacturing firms decide to integrate forward these are some of the fundamental considerations they face. Some firms are caught in the middle of these considerations where only a few seem to get it right and outperform.

The analyses of forward integration have not considered transaction costs economics (e.g., Klein et al., 1978; Williamson, 1979, 1985) to the same extent as prior analyses of backward integration (Lafontaine and Slade, 2007). The literature on forward integration has frequently adopted a moral hazard perspective even when investments in specific distribution assets create significant dependencies on downstream activities (e.g., Anderson and Schmittlein, 1984; Anderson, 1985; Brickley and Dark, 1987; Kalnins et al., 2013; Lafontaine and Slade, 2007). This is different from upstream dependencies on suppliers where manufacturing remains the last point of revenue collection. By maintaining the last point of revenue and profit collection the manufacturing is less exposed to moral hazard in relation to profit consolidation but it also retain its powerful position (Eccles, 1985). This structural challenge has implications in relation to forward integration. Alchian and Woodward (1988) argue that the degree to which quasi rents from asset specificity is vulnerable to opportunistic haggling depends on the assets plasticity. When plasticity is low, this means that monitoring of the use of specialized asset in use is effective and therefore makes detection of moral hazard easy. On the contrary, when the use of specialized assets is difficult to meter accurately this makes then vulnerable to moral hazard.

The empirical evidence seems to favor forward integration when this provides more accurate monitoring of moral hazard related to agents effort (e.g., Anderson and Schmittlein, 1984; Anderson, 1985; Brickley and Dark, 1987). However, when the integrated firm adopts internal pricing on transactions between sequential entities, the moral hazard issues reappear (Eccles, 1985; Holmström and Tirole, 1991; Jensen and Meckling, 1976; Kaplan and Atkinson,

1998; Gibbons, 2010: Williamson, 1985). If the manufactured goods are transferred at cost, the consolidated profits will be registered with distribution, which potentially creates moral hazards if the distribution assets are specific and plastic. Conversely, if manufacturing dictates the price to extract downstream profits, it will ignore the entrepreneurial costs of the distribution agents (Eccles, 1985; Holmström and Tirole, 1991). Hence, the governance of forward integration presents a tension between central management controls aimed to reduce moral hazards and the ability to provide incentives that engage valuable downstream assets and capabilities that are hard to monitor.

Theories of industrial organization analyze the cost-savings of integrated production processes and consider scale and scope economies as sources of competitive advantages (e.g., Bain, 1968; Pindyck and Rubinfeldt, 2013; Riordan, 2008). The profitability of an industry is influenced by ownership concentration where forward integration can enhance market power that restrict output and raise prices (e.g., Porter, 1979, 1980). The internalization of specific assets with tangible as well as intangible (knowledge-based) features can generate quasi rents (Klein, Crawford and Alchian, 1978; Williamson, 1985). They constitute unique internal resources that can reduce the integrated processing costs and create more valuable product offerings (Hoopes, Madsen and Walker, 2003). This perspective is rooted in evolutionary economics (Nelson and Winter, 1982; Winter, 1991) where value creation derives from deployment of unique resources as potential sources for sustained competitive advantage (e.g., Barney, 1991; Peteraf, 1993). These theoretical rationales emphasize the value of idiosyncratic resources, competences, and knowledge within the integrated firm (e.g., Barney, 1999; Connor, 1991; Demsetz, 1988; Kogut and Zander, 1992; Teece et al., 1997). Here the advantages do not derive from lower transaction costs or scale economies, but rather from the valuable features of rare and inimitable resources, capabilities and competences (Nooteboom, 2004; Spring and Araujo, 2013; Story et al., 2017; Teece, 2010). These major theoretical perspectives on forward integration are summarized below (Table 1).

Table 1. Different Economic Perspectives on Forward Integration

	Major rationales	Key contributors
Market transactions:		
Contractual imperfection (*2rd order economizing)*	Contracting is incomplete and does not protect specialized investments against opportunism. Internalizing the long-linked activities along the value chain can reduce transactions costs from opportunism and promote investments.	Arrow, 1969; Grossman and Hart, 1986; Hart and Moore, 1990; Klein, Crawford and Alchian, 1978; Williamson, 1979, 1985.
Aligning interests from asset ownership for effective adaptation	Segregated asset ownership providing different incentives. Integration and weak incentives can provide the firm with several advantages avoiding costly renegotiations to align interests.	Coase, 1937; Simon, 1951, 1991; Williamson, 1975.
Markets do not provide accurate information, costly monitoring and adverse selection.	When markets provide inaccurate indicators of agents effort (moral hazard) this can be solved by integration by access to more accurate metering.	Alchian and Demsetz, 1972; Fama, 1980; Holmström, 1979; Holmström and Milgrom, 1991; Jensen and Meckling, 1976; Salanié, 2005.
Internal efficiency		
Industrial organization perspective – market power – scale economies	Larger organizational size and higher transaction volume creates bargaining power, scale and scope economies. The volume misalignment between linked monopolies (double marginalization) can be reduced/eliminated through internalization.	Bain, 1968; Porter, 1979, 1990; Blair and Kasserman, 1983; Tirole, 1988; Pindyck and Rubinfeldt, 2013; Riordan, 2008;
Evolutionary economics perspective – processing capabilities, resource and knowledge based views	Sustainable value derives from the availability of unique heterogeneous resources and knowledge that is hard to imitate and makes internal processes more effective.	Demsetz, 1988; Nelson and Winter, 1982; Barney, 1991; Grant, 1996; Teece, et al., 1997; Nooteboom, 2004

It is challenging to manage and govern the intriguing interdependencies between sequential business activities in ways that will enhance competitiveness along the integrated value chain and generate incremental value and corporate profits. To analyze how this is accomplished in practice, we proceed to conduct comparative case studies of two integrated manufacturing firms in the same industry to see how they actually govern forward integration. This analysis is guided by the initial insights obtained from the two representative distribution typologies and the extant literatures on forward integration. From this we identify four structural features of the governance approaches that seem to characterize the differences between segregated ownership, contractual relations and internal hierarchy. These four features are: (1) the organizational purpose and instrumental rationales, (2) the adopted coordination mechanisms, (3) the internal performance accounting, and (4) the management control systems. The organizational purpose and instrumental rationales express the argumentation adopted to justify the use of resources and capabilities along the integrated value chain to generate competitive advantage. The coordination mechanisms reflect the way the company integrates competencies and knowledge between interdependent business entities along the internal value chain and delegating responsibility and authority to engage this. The internal performance accounting describes the pricing policies applied on intra-firm transactions and the incentives this creates. The

management control systems explain the methodology used to guide the connected efforts and how the performance of business entities is monitored.

METHODOLOGY

The direct and comparative case studies were inspired by the curios observation that forward integration strategies in the European truck manufacturing industry lead to very different outcomes in terms of growth and profitability. From this observation arose the obvious question as to what causes major manufacturers that pursue similar strategies of forward integration to realize so different performance outcomes.

Industry context

The capital-intensive truck manufacturing industry in Europe went through major consolidations during the 1970s and 1980s as the international competition intensified. Many companies went bankrupt or were acquired (e.g., Bedford, Hanomag, Leyland, Magirus, Pegaso, Saviem). Today the industry is comprised by 7 major brands owned by 5 companies (in brackets), DAF (PACCAR), IVECO (FIAT/CNH), MAN and SCANIA (VW), Mercedes (Daimler), VOLVO and Renault Truck (VOLVO Group). Albeit at different paces, the manufacturers generally started to integrate forward by first taking over importers and later the final distributors in the value chain. The distribution operates in a business-to-business environment with customers ranging from single owner-drivers to large transport companies with thousands of trucks in the fleet. The product caters to a variety of market segments with diverse requirements to the tangible product and related services. Trucks to large fleet customers, e.g., DHL, Kuehne & Nagel, and Fercam are fairly standardized whereas special users, e.g., concrete mixers, cranes, tippers, garbage collectors, etc. require substantial upgrading. Special features like chassis rigidity, multi-traction steering, and other customized needs provide rich potential for value enhancements by downstream distributors. Furthermore, these durable products with decade-long lifespans require effective maintenance services to keep them operational where the total cost of ownership increases in importance. All these factors affect the buying decisions and

present areas where the distributors can differentiate the market offerings and create incremental value.

Two truck manufacturers (A and B, who will remain anonymous) agreed to participate in the study. Both companies date back more than a century and are considered main industry players with annual production of over 80,000 units, revenues in excess of 10 billion EUR, and more than 35,000 employees[7]. Both companies realize similar dependencies on sales within Europe although Company A has a larger home market than Company B. Furthermore, both companies have integrated forward and own a similar number of international distribution entities. However, while the two companies had similar revenue levels in 2005, they have grown and performed very differently since then (Figure 3). Company A has generated operating profits in relation to revenue (ROS) at par with the industry where Company B has outperformed the industry for more than two decades.

[7] Based on the two Companies' 2019 Annual Reports

Notes: Revenue indicates million Euros; Return on Sales (ROS) indicates Net Income (EBT) as a percentage of Sales.

Figure 3. Comparative Performance Indicators of Company A and Company B

We study these two large international manufacturing firms that operate in the same industry where both pursue a strategy to integrate downstream distribution, sales, and servicing functions. The two companies compete for similar customers in the same markets but have very different value offerings and display vastly different customer satisfaction and profitability projections over the past decades. Hence, they are suitable candidates for both individual and comparative case studies that can uncover important differences between successful and less successful governance of forward integration in manufacturing. The case studies are based on secondary public information including annual reports, company websites, industry reviews, etc. and primary data from interviews with corporate executives and functional managers with comparable positions in the two case companies.

Research design

To inquire into the challenges facing forward integrated manufacturing firms and study their governance approaches we chose a comparative case study approach. This approach applies to research questions where the context is important but the boundaries between the phenomenon and the context are unclear (Yin, 2018). To study the governance of forward integration in its wholeness, a case study offers several advantages where the elements in the case cannot be manipulated. This relates to the often conflicting rationales applied to determine firm boundaries that highlight the importance of context for inquiries into the governance approaches based on real life applications. By selecting two representative forward integrated firms in the same industry but with different degrees of success, we can explore the different governance regimes in view of the typological and theoretical considerations discussed in the previous section. Case studies resemble natural experiments and may offer causal explanations related to the governance approaches adopted when manufacturing firms integrate forward (Welch *et al*., 2011; Yin, 2018). Hence, the objective of this study is to inquire into the governance of manufacturing firms that integrate forward into distribution along a vertical value-chain (Figure 1). To this end, the case studies provide data for analysis and a fundamental method of theorizing as we attempt to confirm or disconfirm, enhance and modify existing theory.

The protocol that guided our data collection was inspired by the typologies and economic integration rationales that attempt to outline the trade-offs manufacturing firms consider when they integrate forward into adjacent distribution activities. The guiding questions remained open-ended leaving room to explore new insights uncovered throughout the individual interviews. To uncover the structural features that describe the Case Companies, i.e., the purpose of the organization, the instrumental use of resources and capabilities along the integrated value chain, and how they describe their business model, we started by analyzing the Annual Reports of the two Companies over the past twenty years 2000-2019. In addition to this, we studied the corporate web sites of the two Companies with the same analytical focus. This material is generated by the two organizations themselves and is therefore subject to some selective biases. Yet, the material cannot diverge completely from the real world particularly not the Annual Reports that contain official audited financial numbers with communication generally scrutinized and approved by supervisory boards, stock analysts and shareholder forums.

To complement the information on the governance approaches we also considered other archival data sources that are less subjective including customer satisfaction surveys, market share data, consultancy reports, patent applications, incentive systems, Truck of the Year awards, Jubilee Yearbooks, journalistic articles as well as published academic articles (Table 2).

Table 2. Data Sources From the Two Case Companies

General data source overview		
	Company A	Company B
Interviews (Function and org. Location):		
CEO/Board member (HQ)	1	2
Senior Vice President (HQ)	1	
Senior Vice President (Downstream distribution)	4	3
Directors (Downstream distribution)	2	2
Archival material:		
Patents registered 01/2000-09/2020	X	X
Company jubilee yearbooks	X	X
Truck/Coach of the Year awards	X	X
External information: Published academic articles and consultancy	2	8
Internal strategic programs	7	0
Incentive systems	X	X
Annual reports (incl. CEO's letter to shareholders)	2000-2019	2000-2019
Corporate web page	2020	2020
Customer satisfaction surveys (product and services)	2005-2017	2005-2017
Market share development	2005-2017	2005-2017

To gain deeper insights we also conducted a series of semi-structured interviews with various executives in the two Companies. The interviews were targeted towards high-ranking corporate officers within relevant headquarter functions as well as in the downstream distribution entities. This included board members and senior management in distribution representing relevant Officers at different hierarchical levels, operating functions, and geographies. Prior high-ranking executives with experience from both Companies also provided interesting comparative insights on the governance structures. The interviews of downstream distribution Officers comprise three identical countries. Using multiple information sources

served to saturate the data gathering and triangulate inputs to validate findings from the case studies (Flick, 2014; Yin, 2018). This approach does not constitute purely grounded theory development but nonetheless offers a basis for guided qualitative induction (Levy, 2008; Reichertz, 2014) linked to existing theory.

The interview data from the two Companies was collected between spring 2016 and year-end 2018. The archival data collected for both Companies covered the period from 2000 to 2019 (Table 2). The generally equal amount of data collected from the two Companies allows for comparative analysis and assessment of contextual differences (Yin, 2018). Comparisons can be made across downstream distribution entities located in three countries and between organizational functions and hierarchical levels. This allows the observer to identify potential internal frictions between organizational functions like manufacturing and distribution and between the corporate center and local country entities. This allowed us to achieve saturation in the collection of data (Strauss and Corbin, 1998).

To account for competence and knowledge differences between, say, a board member and a country sales director, the questions were modified to reflect the specific areas of responsibility of the individuals (see Appendix, Table 3). The interviews were semi-structured and conducted with an average duration of around an hour and fifteen minutes. They followed guided questions inspired by the distribution typologies and underlying theoretical rationales (Table 1). In total, we conducted 15 interviews with high ranking officers within the headquarters and related distribution entities (Table 2). All the interviews were taped and transcribed for subsequent coding. To protect the anonymity of the interviewees and obtain their honest feedback, we engaged in non-disclosure agreements with all the participants.

Coding and data analysis

To organize and code this voluminous data from a multitude of primary and secondary sources, we used NVivo as the qualitative data analytical software tool. The first step of the coding process was to assign attributes to each of the primary and secondary data sources. This allowed us to assess the data across different internal and external origins and make comparisons between Companies A and B across headquarters, national distribution companies, and types of information (interviews vs. archival data).

To form our overall understanding, we categorized the data in the initial coding cycle based on the pre-defined structural features (Levy, 2008; Saldaña, 2016). The first data we coded was the longitudinal archival information from the Annual Reports, jubilee yearbooks, external information, internal strategic programs and corporate web pages. This data mostly present the firms' organizational purpose and instrumental rationales adopted by senior management. While this material gave a clear and consistent picture of organizational priorities, it did not reveal the internal structures, incentives, authority, coordination and control mechanisms. These aspects were obtained from the semi-structured theory guided interviews. This interview data was also coded according to the a priori identified features. From the initial four guiding features, we inductively coded the various data. This generated a vast amount descriptive information, which was compressed into similar first order concepts that generally adhere to the phrasing and expressions in the data (Gioia et al., 2012; Wenzel et al., 2019). This process of reviewing and recoding first order descriptive concepts within four pre-defined categories was a constant work in progress throughout the entire data coding process.

In this process we adopted a lumping technique together with a simultaneous coding approach to capture descriptive nuances (Bazeley and Jackson, 2013; Saldaña, 2016). There were several reasons for this. Interviewees often gave lengthy and rich answers (e.g., 2-7 minutes) revealing multiple issues and reflections jumping back and forth across several of the guiding questions. This lumping technique was also applied on the archival data providing a rich understanding of the phenomenon and its context (Yin, 2018).

The next step in the data analysis moved from initial data descriptions and categorizations to a more theoretical grouping. The data codes from the first cycle were grouped into concepts based on resemblance and character and were then further compressed into abstract themes to unify the information around a meaningful whole. This was done using theoretical perspectives that offer explanations on what is going on (Gioia et al., 2012; Saldaña, 2016). At this stage we went through several (re-)coding (Saldaña, 2016) cycles going back and forth between 1st order concepts, using primary data against secondary supporting data, to identify and establish the 2nd order themes. The secondary data used here included information from patent registers, 'Truck of the Year' awards, external customer satisfaction surveys and industry market share reports. This led to the identification of overarching theoretical themes to describe the adopted governance approaches. This analytical cycle inevitably touches upon the interdependencies

between manufacturing and distribution as described in the distribution typologies considering the four pre-defined structural features. The 1st order concepts derived from the interviews and the generation of 2nd order themes were agglomerated into three major dimensions or themes inspired by insights from previous analyses (Braun and Clarke, 2006; Saldaña, 2016). This use of empirical data and theory to distill aggregated dimensions of the studied phenomenon reflects a transition towards an abductive approach (Dubois and Gadde, 2002; Gioia et al., 2013; Welch, 2011) building on new insights obtained from the ongoing data coding process. The transition towards the aggregated dimensions is outlined in Figure 4. The details of the preceding transition from interview expressions and statements to the formation of descriptive concepts are presented in the appendix (see Appendix, Figure 6 and Table 4).

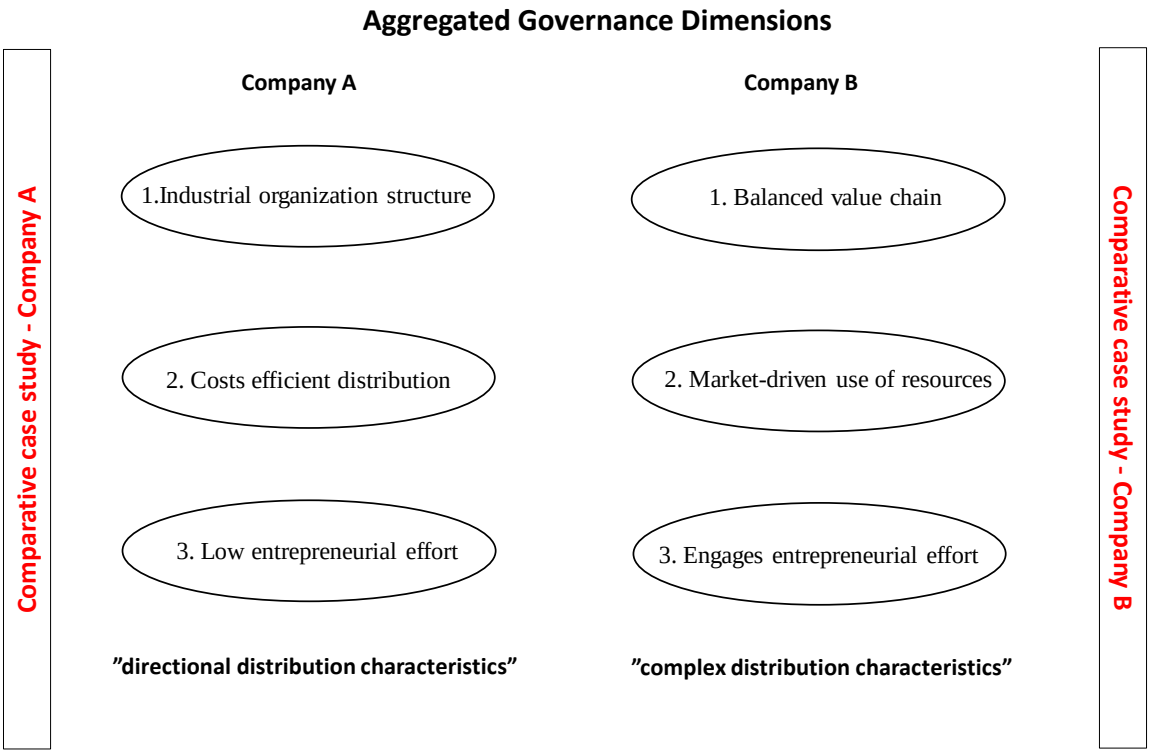

Figure 4. The Aggregated Governance Dimensions Derived from the Data Coding

EMPIRICAL FINDINGS

The theory guided data collection from Company A and B respectively was compounded into seven 2nd order themes that form three aggregated dimensions for each of the two companies (Figure 4). This uncovers two different governance approaches to integrate upstream manufacturing and important sale and services in downstream distribution that resemble the distinguishing characteristics of the directional and complex distribution typologies. These analytical observations should be seen in the context of a market for trucks and busses that increasingly demand flexible solutions to increase the long-term value from the products in use (Baines et al., 2007; Baines, 2015). In this market context, it is no longer enough to manufacture reliable products but the product offering must now meet the demand for extended services as part of the value offering. Hence, the scale and scope economic rationales are less important today than a century ago (Teece, 2010) although capital intensive manufacturing with large investments in R&D still needs to meet certain sales volumes to retain competitive unit costs (e.g., Bain, 1968; Pindyck and Rubinfeldt, 2013). In view of this, the following provides selective transcripts from interviews and collected archival data to describe the aggregated governance dimensions of the two case companies derived from the inductive analytical process (Gioia et al., 2012).

Company A

Company A started forward integration into distribution to secure the manufacturing volume during the 1980es and 90es when sales declined due to the elimination of lucrative foreign markets and subsequently to reduce the power of independent distributors that prioritized their own profits. It was triggered by the aftershocks from wars in the Middle East and the 2nd oil crises that contracted important overseas markets, e.g., Iran, Iraq, Nigeria, Syria. In this situation, the company relied on a sizeable home market and European expansion to secure the production volume engaging private investors to develop the expansive sales and service organization. This explains why the underlying purpose of Company A's governance approach is to manage distribution and secure the required sales in the market arguing that sufficient

manufacturing volumes will secure efficiencies in line with economic rationales found in the industrial organization literature.

This governance theme expresses the corporate planning and budgeting considerations at the manufacturing headquarters with a primary focus on sales to ensure the production volume. The way Company A coordinates activities with the integrated distribution is clearly prioritized by the manufacturing headquarters to generate economic efficiencies. The production is sealed off from turbulent market conditions and fluctuations in demand (Thompson, 1967) using top-down planning with ambitious volume budgets. This is expressed by a country managing director (interview 2) who described the governance approach this way: "well, it gives them [HQ] the freedom to, let's say, boost the markets in terms of allocating resources to various parts if they think they need that to have more production output."

A country sales director (Interview 5) continues: "they [HQ] are defining what are the targets and they are breaking it down to the smallest unit … and then, in our daily steering, we are focusing always on the volume side. We are not even focusing on the money side."

Another country managing director (interview 13) explained: "the factory basically has a very linear mentality to planning. And your market share will always be at 10%. They have little or no concept to the vagaries and the dynamics in each market. They want a very simple view. And, therefore, they don't like change."

This reveals a governance theme where the primary role and function of distribution is to generate a sales volume that can secure the economic efficiency of production at the manufacturing headquarters.

The inquiry further reveals that Company A has an organizational center of gravity (Galbraith, 1983; Ilinitch and Zeithaml, 1995) embedded inside its (proud) engineering and manufacturing heritage located upstream and far away from the final end-users in the market (Teece, 1982).

A country managing director (Interview 2) stated: "I think I would say mainly engineering, supreme technologies, and reliability in the engineering. This is what made us a strong company." A senior ranking HQ employee (Interview 6) expanded: "I would rather say it's our damn task to become the voice of the customer. It's also the task for our organization to really

figure out by being close to the customer, to understand the business and their needs. And here we have definitely room for improvement."

Analyzing the annual reports from year 2000 shows a rather one-sided focus on engineering where the company in all 20 annual reports uses the statement "Engineering the Future." These engineering capabilities are also visible in the award: International truck/bus/coach-of-the-year. The award acknowledges efficiency in transportation and sophisticated technical solutions. Company A has accumulated a total of 15 awards and is ranked 2nd in the industry with far more prizes than Company B. Company A has also registered more than 10 times as many technological patents than Company B[8]. The engineering technology and manufacturing focus is corroborated by a consultancy report retained by company A.

This describes a governance theme where the manufacturing headquarters perceive value as being created (solely or primarily) from resources and capabilities located in the upstream manufacturing and engineering functions.

Forward integration makes it possible for Company A to circumvent the sharing of provisions with an independent distribution function (Klein, 1995; Raynaud and Lafontaine, 2000) looking to maximize own profits. This can be seen as an attempt to avoid volume reduction embedded in the double marginalization problem of sequential monopolies (Eccles, 1985; Pindyck and Rubinfeldt, 2013; Riordan, 2008; Tirole; 1988). However, when resources are used to optimize the manufacturing headquarters' demand for sales volume, as opposed to generating incremental profits from distribution entrepreneurial efforts (Eccles, 1985; Grossman and Hart, 1986; Holmström and Tirole, 1991), the integrated distribution entities do not act as profit centers but more as revenue centers (Brickley et al., 2015; Eccles, 1985). The profit optimization is coordinated through planning (Thompson, 1967).

A country finance director (interview 15) expresses this: "by looking at the transfer price structure, by looking at the products we're selling. So the idea of the company is that through analysis done by the headquarters, they can optimize the product mix of the countries and tell them how to achieve optimized [aggregated] operating profit. They are the ones that decide on the optimal vertical structure, and it's the job of the country then to implement that and to deliver

[8] Source: Patents.google.com (01/2000 – 08/2020)

the results" … "You make a loss with every truck you sell, you make a bigger loss the more trucks you sell.. That means you don't have any [incentive]-- no company will work that."

A country managing director (interview 2) explains: "you're actually allowed to do the deal to lose the money, but you're not allowed to keep your people to build up your company.. "Shut up, do what we say, fire your people. We don't care. We listen, but we really can't change it. Just do it. And then don't stand up for the consequences after that."… "We are seeing the consequences now. We can't keep up the pace" ... "I don't see the logic all the time, honestly. I really struggle with that sometimes, and I close my door and stand and look out of the window [laughter]."

This describes a governance theme where the downstream distribution entities are turned into revenue centers without any direct profit incentives. Altogether, these themes reflect the optimal structure outlined in the industrial organization literature.

Another observed governance theme is the conscious intent to run a cost efficient distribution to minimize the transaction costs associated with moral hazard issues and shirking on effort (Kalnins et al., 2013; Lafontaine and Slade, 2007; Woodruff, 2002). Empirical studies suggest that firms integrate forward when markets provide costly monitoring of agents effort (e.g., Andersen and Schmittlein, 1984; Baker and Hubbard, 2004; Brickley and Dark, 1987; Brickley et al., 2003). This is also the case in Company A where actions are taken to mitigate potential moral hazard costs in the downstream distribution entities. This is reflected in the way the headquarters delegates budgets with demanding top-down budgeting of sales targets and restrictive internal cost allocations for, e.g., marketing initiatives, headcounts and discretionary spending outside defined sales targets. The consolidation of profits at the manufacturing headquarters aims to ensure that as little cash as possible remains with the integrated downstream distribution entities.

A country MD (interview 13) explains. "We have these targets, these [budgets] that is, in most of the cases, a bit, let's say, dreaming, wishes, extreme wishes. [..] Here, in this country, we spend 0.35% of the turnover in the marketing expenses. It is one-third percentage of what they spent in other brands. [..] We don't spend on marketing because we need to spend on administrative costs. [..] A lot of internal inefficiencies that are stealing indirectly jobs to other activities or money to other initiatives, marketing is the first victim [..] we do not have people

that is really needed to support the salespeople, product marketing [..] we should have higher costs here, stronger organization."

This is further elaborated by a senior vice president at headquarters (interview 7): "I think we are currently in an organization where we have too much control over the people over there. We don't let them take any-- well, it's a little bit black and white, but there are too little decisions they can take autonomously and I would like to have them a little bit-- not a little bit, forget a little bit, more empowered.. We in the central organization have to approve that and I think that's stupid. Sorry for the words, I don't think my managers are stupid, but I think that's stupid because I think you should empower him [country MD] because his bottom line-- if he can do that. If he can generate more volume or better margins with [extra resources], and covering the costs to get a better bottom line, who cares?"

The data further reveals how the company uses measurable KPIs to monitor the efficiency of distribution (Alchian and Demsetz, 1972; Anderson and Schmittlein, 1984; Lazear and Gibbs, 2014). When the distribution entities act as a revenue centers with no profit incentives, the corporate goals must be achieved using other instruments. Company A has adopted efficiency related KPI systems to achieve this enforced by the implementation of IT-based administrative systems like SAP. It is evident that the diagnostic control systems (Simons, 1995) are enforced by manufacturing to monitor the distribution entities in view of the delegated budget targets presented to the board of directors on a monthly basis for official sign-off and approval. The reporting system is used to conduct quarterly or semi-annual business reviews with the distribution managers.

A country MD (interview 13) explains: "we keep telling [HQ] that we're not going to deliver. Do we say this in the [volume planning]" And the answer is "Yeah, of course, we tell them that we're under pressure, but they don't accept the reduction in our numbers." They just say you have to-- it's almost the same as, "Don't tell me about stormy waters. Just bring the boat home." And the [volume planning] for us, is a completely and utter waste of time because there's no two-way dialogue. What they're trying to do is they have a number of markets that have to deliver a total volume. And if the [country] or any other market is going to fall short and they can't find that volume somewhere else, you have to do it…Okay, you remember this month it's 500? How many are you going to do?" "400." "No you're not, I don't accept any less than 500."

Another country MD echoes this (interview 10): “I can tell you. I mean when you see the whole bonus process the company is driving.. It's hard facts. It's market-share, it's ROS, it's CXI, it's all these KPIs full stop. So, you do not evaluate how somebody's treating his people - how anybody is behaving to the values.. [Employee satisfaction barometer] You've participated or not, so it's more and more really pure KPI’s.”

The analysis of annual reports also reveals that Company A has little emphasis on company mission and values. The 2004 annual report for the first time introduces corporate values only to disappear two years later and then not to be seen again in subsequent reports.

The emphasis to control moral hazards in distribution adopting efficiency-based KPIs in pursuit of tight budget-driven targets and the absence of mission and values as guidance reflects an overarching governance dimension focused on efficiency in distribution.

Another set of observations relate to the entrepreneurial efforts in downstream distribution dealing with customer needs in the market (e.g., Lafontaine and Slade, 2007; Lightfoot et al., 2013; Oliva and Kallenberg, 2003; Woodruff, 2002). The collected data show that decision power and formal authority to control resources resides with the manufacturing headquarters that has the property rights (Alchian, 1989; Grossman and Hart, 1986; Hart and Moore, 1990; Woodruff, 2002). The managers in distribution that hold specific market knowledge have little authority to take market initiatives (Aghion and Tirole, 1997; Fehr et al., 2013; Williamson, 1975). The manufacturing headquarters uses formal authority to delegate sales targets to the distribution entities to secure coordination and fulfillment of headquarter priorities.

A country MD (interview 10) refers to the sales targets in the yearly budget round: “I was on holiday. Different time zone. It was late at night. I received a phone call. I didn't pick up. I receive it again. And again, and again, and again. So I said, ‘Okay. Now I pick up.’ In the middle of the night.” The caller said: “I know you are on vacation, but you have now six hours’ time and you put the figures in the system.” I responded: “Okay. Why should I do so? Because we will never achieve it..” “Because I tell you so.” Hmm? ‘Yeah, but this is not what will happen.’ ‘We have to work on what will happen.” He continued: “Okay. But I still need to have this in writing from you. Because otherwise, I won't do it.” The reply [from his boss at HQ] was: “If you do not do this, think about your last days in the company."

"They are all [HQ management] protecting their own personal positions rather than looking at it in the bigger picture" as one country managing director (interview 13) put it.

When important value adding activities are different from those of the manufacturer, responsibility and authority should be delegated to engage the needed idiosyncratic capabilities and resources (e.g., Bering 2020a; Connor and Prahalad 1996; Demsetz, 1988; Gereffi et al., 2005, 2018; Jensen and Meckling, 1990; Nooteboom, 2004; Story, 2017; Teece, 2010). The incentives should reward effort that relates to asset value like future value creation that often provide broader incentives and not only focus on measurable output performance (e.g., Alchian and Demsetz, 1972; Holmström and Milgrom, 1994; Lazear and Gibbs, 2014). The headquarters needs internal measures to engage and reward these value-creating entrepreneurial efforts (Fehr et al., 2013; Holmström and Tirole, 1991). If not, the entrepreneurial engagement in distribution is diluted (Lafontaine and Slade, 2007; Oliva and Kallenberg, 2003; Oliva et al., 2012; Woodruff, 2002). Company A suffers from this lack of incentives to engage and motivate downstream entrepreneurial efforts.

A country finance director (Interview 3) describes the incentive structure this way: "one third is targets that they can change themselves. Of these targets, we have profitability which only can partially be influenced locally. You have market share which also you can argue can only partially be influenced locally because we have a lot of-- it depends on transfer price in the products you're getting. So I would say that the local performance and that is a complete estimate from my side is maximum 5 to 10 percent of the whole incentives they're getting. So 90% is out of their [country management] hand.." And he elaborates: "If you are not paid to optimize your business, and if you do that [ignore optimization] over consecutive time of years, you will not find many entrepreneurs in your ranks of MDs."

A country sales director (interview 5) argues: "if it would be my company, I would focus much more on the customer and, especially, on the staff side because, here, I would say that in the long run these are the two elements which are heavily impacting of course the volume and the monetary side. And then, in our daily steering, we are focusing always on the volume side. [..]We are hunting the volume, and we are acting short term, but staff and customer is basically, in my eyes, a contradiction because, here, you have to work extremely long term, but we are always very short-term focused."

The use of formal authority to coordinate top-driven sales targets and drive efficiencies in the integrated distribution activities uncovers a governance dimension of failed incentives to support market related initiatives resulting in low entrepreneurial effort.

Company B

Company B originates from a smaller home market and early realized that to achieve sufficient scale they would have to expand beyond national borders. This presented major challenges as different national legislations, customer needs, and local preferences created a variety of customer demands that needed attention. This forced the company to develop a flexible production system to accommodate different product types and volumes. The company introduced major innovations using standard electronic monitoring devices on the trucks to inform on customer usage, reliability, service patterns, etc. where creation of customer value is a core mission. After years of successful partnerships with independent distributors, the company started to integrate forward by buying out the private national partners across the increasingly integrated European marketplace.

The data analyses reveal a very different business dynamic where value is created from both upstream and downstream resources although Company B remains a manufacturing and engineering oriented company with a focus on efficiency to stay competitive. It is also evident that the downstream distribution takes a very different role compared to Company A. The idea is not to replace the importance of the tangible manufactured product but rather to operate a business model (Kindström and Kowalkowski, 2014; Teece, 2010) that creates value for suppliers, employees and not least the customers. This is done by focusing on tailoring product specifications to the customers' specific demands and partnering with customers to ensure the most efficient transportation solutions and value-in-use throughout the whole product life cycle (Baines et al., 2007). This means that while the technical capabilities of the product has high importance, the knowledge embedded in the downstream distribution is equally important to ensure value adding product differentiation with high customer satisfaction and loyalty (Lightfoot et al., 2013). The early recognition that success rested on satisfying different customer demands has institutionalized an organizational culture that engages both external and internal stakeholders.

Economies of scale and scope are important to Company B as is visible in several areas of their manufacturing processes with constant focus on Japanese inspired ‘kaizen’ and continuous improvements developed over several decades. This process encourages all employees to participate in improving efficiency and quality with a mutual agreement between employer and unions that improvements are not be turned into layoffs, if they are successful, but are rather used to enhance further training and competence development. In view of the small home market and a need to compete in different overseas markets, the company developed a modular product specification concept, which it has perfected. With this production technology, Company B manufactures more than twice the amount of trucks and busses per employee compared to Company A.

The analysis of Company B’s annual reports over two decades (2000-2019) implicates, without exemption, a consistent emphasis on the modular system and production flow as a core strategic competence and priority. A senior executive elaborated (Interview 9): “the company was globalizing very, very early. And that meant also that they got a very huge variation in the customer applications and customer bases and from very different export markets. We had a genius in the company who took up an old German system “Bau Kasten” or you can say Lego system.. and he developed a system in the 50s and the '60s to build a [brand] truck as a Lego system so the customer individually specify the vehicle or the distributor could specify the vehicle. Then according to his own wishes, some extra had to be done at the dealer level but most was done in the factory. So it was a very smart system. The first in the whole industry.” As a senior executive explains (Interview 12): “the pillars of our strategy or what is our let's say, DNA. One is the modular system with all the let's say, the impacts when it comes to our let's say, ability to R&D, and to be let's say, have less parts and less parts developed etc., working on the modular system. Second one, is we always refer to how we are let's say, flow-oriented when it comes to our internal flows, when it comes to our production.”

While Company B historically has a strong upstream manufacturing center of gravity (Galbraith, 1983) it has also recognized the importance of downstream activities to enhance the value of the manufactured product for the company and its customers (Neu and Brown, 2005). This is visible in a balanced value chain where distribution acts on a hierarchical par with manufacturing.

Analyzing all the annual reports shows that services always are listed as independent business activities with corresponding revenues and profits and take equal importance to the sale of tangible produces like trucks and busses. For example, the 2004 annual report describes the service activities in this way: "just as [brand] has refined its modular system over the decades in research, development and production, today it is developing a similar system for the important service market." In the 2011 annual report we can read: "[Brand's] objective is to provide the best profitability for its customers throughout the product life cycle by delivering optimised heavy trucks and buses, engines and services – thereby becoming the leading company in its industry. The foundation is [Brand's] core values, focus on methods and dedicated employees." and it continues "For our customers, it is ultimately a matter of meeting their day-to-day needs by having vehicles with the best possible uptime. The more hours the customer's transport equipment is available, the more revenue for the customer. However, each customer is unique and has specific needs. In partnership with customers, we develop packages of products and services that deliver high efficiency, profitability and sustainability."

This focus on creating value along the whole internal value-chain is explained by a senior executive (Interview 9): "that was in the middle of the 90's, we started to work with Toyota and Toyota manufacturing system, a lean production but lean is not a good translation. It's the flow of activities and it's a flow-driven production system and Toyota has three leading words, "customer-first", "the people", and "quality." And we introduced that already in the mid-90s with the help of Toyota.. So we had already that culture. Also, in the engineering side and in the assembly side that our focus in everything we do is on the customer. No hobbies, what we think, what we believe ourselves is the best. No. Focus has to be the customer."

This emphasis on the capabilities of people and customer value is confirmed by published research papers that have analyzed Company B's decision to integrate forward (Ahlstrand, 2015; Brunninge, 2005; Brooks and Reast, 1996; Johnson and Bröms, 1995). These studies focus on the complexity of structurally integrating the value adding activities and the indirect roles of leadership and organizational culture in a seamless value system. Company B had embedded these priorities in the company values and the organization's mission and vision to drive change from being a pure manufacturing company to offering advanced services and consultancy in close customer partnerships.

When integrating forward top management early recognized that running the distribution effectively required a market driven use of resources and competences. This recognizes that services require a different understanding of market opportunities but also an emphasis on the value of the product offerings.

This can be seen in the statement from a country managing director (interview 11) when discussing the impotence of production volume: “if I don't have some kind of, we talk about consolidated picture on that, we sell this truck to this customer, we can earn money in [country] in this business unit then I leave the business. Right or wrong, but I mean I would never give away a truck if I don't see that there is a potential in the long-term to have a profit out of this customer in [country] because I don't know the margin in the factory.” This downstream focus on profitability rather than fixation on volume focus is confirmed in other publications (Brooks and Reast, 1996; Brunninge, 2005) where a number of retired executives were interviewed (Johnson and Bröms, 1995).

A senior executive (interview 12) inside the headquarters elaborates: “if you look into [sales and service], which again is a completely standalone P&L, all from the consolidation of the result of commercial operation down to each and every workshop, down to each and every bay in the workshop has its own P&L. So we are really much running our [sales and service] operation as if we were a [external ownership].. as if we were let's say a separate entity within the company when it comes to our P&L.”

This focus on profit ownership inside the distribution is also visible in the annual reports where service revenue and profits are reported annually without exception.

To maintain this kind of downstream ownership of results Company B has adopted different mechanisms to ensure a continued focus on use of specific resources to enhance the product value.

A senior executive (Interview 9) in HQ explains the adoption of this inclusive approach: “what we had to do is that the engineers, they take the product development and the manufacturing and then we separated this organization, sales and service organization, we put businessman here… all of them coming from outside. With the right mindset.., and business skills. If he can't produce a good bottom line here [at the distributor level] and negotiate here [customers] and negotiate there [HQ], he has not future career.”

Another HQ executive (Interview 12) elaborates on the leadership values: “you can never be accountable or feel it's your own business if you're imposed and told. If you're told, "Do this. Do that. Put the boundaries," after a while you just get yes soldiers saying yes. And at the end this spills over all the way. So its very important for us to work that way. However, at the same time when having this said that, we also have a-- these regions are very powerful. They should be, so they are, let's say, accountable in power and command, etc… call it, delegated closer to the market with, let's say, accountable people out there.. It is from a very central top-level situation impossible to be in command for all. But there's very healthy dynamics there.” and he continues “We are moving towards bigger and bigger independence from the headquarters because for me this is how it should be. It is a counterweight of the regions, let's say, running everything that there somewhere is a body which is, let's say, in some way being a counterweight and, let's say, so that it doesn't become for me too much dependent.. So the boards are, let's say for me, an independent organ.”

This is also echoed by a director of a country (Interview 8): “the board is an advisor. It's a body which is giving support to the MD and giving him suggestions on which direction he should go. They do it from the point of view of the local company, what do they think is the right thing to do for that local company.”

The mission statement remains largely unchanged from year 2000 to 2019 and emphasizes creating value for customers by fulfilling specific customer needs through high-quality products and services as paramount for sustainable growth. The mission statement recognizes the importance of downstream activities and a prioritization of idiosyncratic resources and capabilities in distribution for customer value and sustainable growth. In other words, the evidence displays a market-driven use of resources throughout the organization.

In an interview with a country managing director (Interview 14), he explains that yearly marketing plans include feed-back to the factory regarding the requirement for new product specifications where these updated marketing plans were read by everyone in top management and taken very seriously.

It also relates to the use of own resources as a country managing director explains (interview 8):“if you have an investment, it goes up to the head office and there is a final decision on that investment. But there are no decisions on personnel on a central level and no

decisions on SG&A on central level. And there is also no alignment of the budget between the [national companies] and the head office. They don't bother to align the budget numbers. Numbers of vehicles for example or numbers of parts. They don't bother to align that between the NSC and the headquarters."

Many employees were exchanged between headquarters and the national sales companies as expatriates (Interview 8) but headquarters also showed respect for local decision-makers (interview DC). The sales director of the country explained: "it tends to be very mature person coming in to run the [country] on an expat contract. And I don't know this for sure - but it feels like their brief is don't mess it up [laughter] if you know what I mean. They were very much margin and profit focused. There won't be endless discussions on a weekly, monthly basis about the sales of that given month. Those were not there. And I would have to say my role was more field operational than headquarter. So I wasn't living the daily conversations with [headquarters] around orders and deliveries."

Another country sales director explains the use of local knowledge in operations (Interview 1): "so when the customer buys a [brand], he gets fantastic buying advices. And it's a pleasure to do it from our end, because we can behave very professionally. 30 years ago, you asked a customer about his needs, and then you explained-- because you expressed you need this, I have specified this for you, and it is fulfilling your needs, because it can do X, Y, Z. Today we work with what we call challenging sales. Challenging in a way that instead of just- 'the customer. I want this, and I want that.' That's fine. I would also like to present an alternative to you to discuss that."

From the HQ a senior executive (Interview 9) explains how the understanding of services was developed: "you have to convince people, you have to send out people to train them, to widen their horizon. That was why some of them went to [service company] in Sweden and also in Norway to learn this, how to sell services to get the concept and they were enthusiastic when they returned and said, "Okay. Of course, we have to go in this direction," because there's so many customers asking for these type of services. So the demand was already there in the market. For us, it was how to structure products so we could meet the demand in the market."

The ability to engage entrepreneurial effort in distribution has always been a core challenge in forward integration (Brickley and Dark, 1987; Lafontaine and Slade, 2007; Oliva and

Kallenberg, 2003; Silverman and Ingram, 2017; Woodruff, 2002). The analyses of the data show that Company B is seeking to economize on effort and idiosyncratic resources and capabilities using delegation and personal incentives that in many ways resemble incentives provided by asset ownership (Grossman and Hart, 1986; Holmström and Tirole, 1991; Lafontaine and Slade, 2007).

A senior executive in HQ (Interview 12) with years of experience as managing director of countries explains: "we are extremely fortunate in this company, which I recognize after many years traveling the world and being present everywhere. And it's always a challenge when the company grows, etc., when we expand, etc., to be - how should I call it?. - a very value-oriented company. It is because our retail operation is so extremely devoted and dedicated to our customers. It is something that we say-- I say. That's why I said I'm fortunate that we have this, that we have people that are so passionate about working in this company and working for this product. There I see our success in the [integrated distribution] that we're able to combine the value, how people let's say are feeling. I have been myself running two of our business units outside. One was the Spain, Portugal the Iberia and the Brazilian and to almost bizarre way felt that this is my company. I lived it as if it were my own."

This customer focus is also captured in the results from independent industry wide customer satisfaction surveys where Company B largely has been the benchmark from 2005 to 2018 in the eight major European markets.

A country managing director (Interview 11) elaborates: "I think that the general picture is if you are operating as an MD for a business unit, you have the freedom and responsibility to act. Quite good, I would say… But my feeling is that we are still very-- we have the full responsibility to operate our profit center in a good way. So our, let's say, area where we can act within, is quite big.. I mean, I don't see the need to report to my manager every week. So I don't feel we are trapped in some kind of reporting system where every Monday I need to report up and talk and blah, blah. It's not like that."

It is not that there are no expectations to the countries as a national sales director (Interview 1) explains: "of course we are challenged to create-- they do a target letter, so they make that. This is time now for choosing the target letter of 2018. They said the factory-- the factory say we think you should go for X% market share, and we expect that you grow your EBIT like this.

And then we start to work to can we make a plan which could give what they are suggesting. And then we may not come back fulfilling what they are suggesting. And we will say, it's a very interesting challenge, but I think it would be too expensive to get the market share you're suggesting, so we are suggesting this instead. You can call that a kind of negotiation, but you could also-- if you are talking about reality and you have the right facts on the table, very often it's not difficult to get to an agreement. It's not like they say. Now you just do it. Don't tell us you can't. I mean that kind of language you would not see."

There are strong personal incentives to the agents operating in the integrated distribution entities. From the interviews it is clear that while profit is important, management in downstream distribution is heavily incentivized by the performance of the business unit. Incentives are not only build around short measurable targets but also on softer longer-term parameters as an executive (Interview 12) explains: "the worse it gets, the louder you scream. The more KPIs you ask, and the more pressure you put-- if it works, it works for a short time. But something breaks, something is hidden somewhere else, something is not addressed so it's not sustainable over time." He continues: "about one-third is company [corporate performance] and two-thirds is local or own performance" and adds that Incentives for country directors are defined by headquarters where targets extend a six year horizon. One of these targets is of course customer satisfaction.

A country managing director (Interview 12 [and 11]) explains: "the incentive programs are built up in a way so that if I leave here now, I will still have an incentive part belonging to [brand country]. two years after I have left. So it's not if I-- the last day of my assignment I clean everything up in order to get an extremely good result in the last year. And then the next year it would be a disaster due to that decision. I will have a punishment in my incentive program due to that." And, he continues: "It's important also to gauge how you deliver result. Do you do that with all your employees being killed in the delivery? Or are they still alive when that result has come? And I still think that with our [brands] core values accepted that is an important part of how we are doing it."

This evidence of engaging entrepreneurial efforts across value chain activities and into the local distribution entities is also reflected in the data collected from all the annual reports.

DISCUSSION

The individual and comparative case studies investigate how two representative manufacturing companies govern forward integrating into distribution. The context for the study is the European truck and bus manufacturing and distribution industry, which is becoming increasingly complex as end-users demand more tailored offerings with services to ensure effective product up-time and utility. This technology-based, capital-intense, and competitive industry is pertinent for this inquiry involving two close competitors that pursue similar forward integration strategies but with very different growth and financial performance effects.

Manufacturers and distributors use contractual arrangements to coordinate interdependencies between the long-linked business activities and by incentivizing innovation and entrepreneurship using segregated ownership structures. However, these approaches can lead to unintended transaction costs (Coase, 1937; Williamson, 1971) and moral hazards from misaligned incentives (Klein, 1995; Lafontaine and Raynaud, 2000). Different economic theories provide rationales to assess these issues but do not always lead to consistent optimal governance solutions (Holmström and Milgrom, 1994). Hence, the empirical research on forward integration is often torn between prescriptions for internal controls and accurate metering to optimize efficiency and minimize moral hazard and providing some freedom with incentives to encourage valuable entrepreneurial resources and capabilities (Lafontaine and Slade, 2007). The dilemma is also visible in the growing servitization literature where manufacturing firms struggle to make the integrated services profitable (e.g., Gebauer et al., 2005; Neely, 2008; Oliva and Kallenberg, 2003; Story et al., 2017).

When manufacturing firms acquire their distributors the contractual arrangements, and incentives from segregated asset ownership, are substituted by the hierarchical governance within the integrated firm (Grossman and Hart, 1986; Williamson, 1985). The directional and complex distribution typologies provide useful pointers describing specific business environments where different economic boundary theories provide conflicting integration prescriptions. Manufacturing firms that contemplate forward integration need to address the underlying economic rationales and effects of the internal hierarchy with structures of authority, responsibility, controls, and incentives that now must be established (Zimmerman, 2011).

Several elements contribute to the forward integration conundrum as a move to incorporate downstream activities that present distinct challenges compared to an upstream move. Forward integration in manufacturing increases the sensitivity to the needs of final end-users in the market that generate the revenues. The location of relevant resources along the full value chain presents important and challenging requirements to engage and coordinate valuable capabilities to develop the proper product offering to the market (Gereffi et al., 2005, 2018; Teece, 1982). Access to relevant resources and capabilities is a motivation for integration (Barney, 1999), but it can also stretch existing resources in manufacturing in new unknown applications (Harrigan, 1986; Porter, 1990). Another motivation is the fact that transactions between sequential monopolies can lead to suboptimal volumes due to embedded incentive misalignments often referred to as double marginalization (Eccles, 1985; Klein, 1995; Riordan, 2008). Incentive misalignments can also arise from the plasticity of valuable downstream asset investments that create a potential for moral hazards that are costly to monitor and difficult to detect (Alchian and Woodward, 1988; Lafontaine and Slade, 2007). In view of this, we observe distinct differences in the way the two cases companies govern the integrated manufacturing and distribution activities.

Company A displays a strong center of gravity in its upstream manufacturing and engineering capabilities (Galbraith, 1983). With the sudden loss of lucrative regional markets, the company substituted the lost volume in the large home market and by acquiring and integrating foreign distribution entities in Europe (and beyond) to maintain scale economies in manufacturing. The forward integration provided (potential) advantages to reduce incentive misalignment and sub-optimizing double marginalization (Brickley, Smith and Zimmerman, 2015; Eccles, 1985; Klein, 1995; Riordan, 2008). The company's manufacturing headquarters that holds the integrated asset ownership (Simon, 1951; Williamson, 1975) imposes authority to coordinate volume interdependencies and plan the needed manufacturing volume (Thompson, 1967). However, the weak incentives also refrain downstream managers from prioritizing tasks that do not contribute to manufactured volume (Holmström and Milgrom, 1991, 1994). The biggest risk for being fired, dismissed, or demoted in the organization arises if the planned sales volume is not achieved.

With distribution being the final point of revenue consolidation, it more assumes the role of a revenue center as opposed to a profit center (Brickley, Smith and Zimmerman, 2015). This

will sometimes reverse incentives due to the adopted transfer pricing methodology, so only limited profits remain with the distribution. The application of a diagnostic control system (Simons, 1995) can reduce the manufacturing's exposure to moral hazards from plastic specialized assets inside distribution (Alchian and Woodward, 1988), but it also reduces incentives to achieve profit targets. While the company also consider customer satisfaction indexes, these softer and future oriented KPIs do not receive the same attention as the enforced sales plans and cost controls. The prioritization of manufacturing volume is reflected in the monitoring efforts and quarterly business reviews with the manufacturing headquarters. In sum, the headquarters imposes tight controls to reduce moral hazard and ensure a cost efficient distribution (Anderson and Schmittlein, 1984; Brickley and Dark, 1987; Kalnins et al., 2013; Lafontaine and Slade, 2007; Woodruff, 2002).

The governance regime exercised by Company A has implications for the entrepreneurial effort displayed by the integrated distribution. Using formal authority from property rights (Aghion and Tirole, 1997; Alchian, 1989; Fehr et al., 2013) to enforce integrated distribution efforts that benefit manufacturing effectively mutes non-contractible activities (Grossman and Hart, 1986; Holmström and Tirole, 1991). These activities relate to efforts to increase customer satisfaction and consultancy that hold a promise to create future profits. Reducing these non-selling distribution activities have immediate cost effects that take priority over longer-term future returns. The lacking commitment to develop intangible capabilities make such investments a personal cost of the managers working in distribution because the related expenses are not recorded in the accounts or considered in the incentive schemes (Grossman and Hart, 1986; Holmström and Tirole, 1991).

Company B has developed a unique governance regime influenced by different circumstances. Operating in a smaller home market, Company B recognized early on that it had to focus on expansion in overseas markets to gain the necessary volume for scale economies. The company was forced to meet the different national product demands to compete in the international markets, which shaped an ability to innovate with different product specifications and produce this variety of demands very efficiently. In short, Company B early on learned the importance of focusing on customer needs and offering tailored quality products in collaboration with local private distributors to ensure customer value and loyalty. The company's decision to

integrate forward recognized the importance of downstream resources and capabilities with local market knowledge aiming to exploit the entrepreneurial efforts that created the early success.

Company B remains an engineering heavy manufacturing company with a strong upstream center of gravity (Galbraith, 1983). This is visible in the company's development of modular manufacturing aimed at constantly improving production efficiency that meet the requirements of diverse customer demands. Company B pioneered the customer-specific applications of the tangible product using advanced digital technology in close consultancy with customers. The company preserved an entrepreneurial dynamic often associated with private ownership and created a balanced center of gravity with equal emphasis on manufacturing and distribution. This is reflected in the acknowledged importance of distribution when developing services that create customer value and loyalty (Baines et al., 2007; Lightfoot et al., 2013) as the basis for harvesting downstream profits (Wise and Baumgartner, 1999).

The distribution entities in Company B operate almost as independent profit centers. This ensures that the distribution prioritizes the development of own resources and capabilities (Nooteboom, 2004; Spring and Araujo, 2013; Story et al., 2017; Teece, 2010) to deliver advanced value adding activities evaluated on the basis of aggregated performance indicators that resemble asset ownership (Gebauer et al., 2015; Neely, 2008; Oliva and Kallenberg, 2003). To safeguard the customer orientation, the CEO installed several supportive initiatives. Business oriented leaders were hired at the headquarters and in the integrated distribution with knowledge of the end-user markets to resist a manufacturing dominance. Outsiders were appointed to the distribution supervisory boards to provide unbiased advice to headquarters about market conditions and downstream performance but also to support local country managing directors. An extensive service training program became mandatory for all leading headquarters staff to create consciousness about service opportunities for profitable growth. The office of the CEO became an entity of forbearance overlooking the entire value-chain with a market driven resource orientation rather than optimizing manufacturing profits (Williamson, 1985).

Company B has a strong engagement of downstream resources in important entrepreneurial efforts where the distribution entities operate as profit centers with authority and responsibility to optimize the use of own assets (Brickley et al. 2015; Eccles, 1983). The profit center status enabled coordination of reciprocal interdependencies through mutual adjustments between manufacturing and distribution (Thompson, 1967) in an attempt to create internal mechanisms

that resemble effects of asset ownership (Arrow, 1974). This is a pragmatic way to engage non-contractible entrepreneurial efforts that otherwise are difficult to meter (Grossman and Hart, 1986; Holmström and Tirole, 1991). Company B uses different performance monitoring systems. While headquarters recognize moral hazard and employs a set of diagnostic key performance indicators (KPIs) to monitor efficiency, they are not used to slavishly steer the country activities. The KPIs are used as information to support local decisions combined with other controls like belief systems where core values emphasize creating value for the customer (Simons, 1995).

Company B has adopted a governance approach of the integrated distribution activities with a different purpose, namely values of business ownership intended to explore opportunities through closer engagements with the customers that can create value for all involved stakeholders. The engagement of idiosyncratic resources and capabilities in the downstream activities makes this governance approach resemble the complex distribution typology.

Comparing the individual studies of each of the two companies reveals other noteworthy aspects. While both companies have strong engineering and manufacturing backgrounds and are recognized for their high quality products, this heritage has been used very differently. Company A followed a path with a very strong focus on product innovation and engineering excellence. Hence, Company A has filed more than 10 times as many technological patents as Company B over the past twenty years. This focus on technological features is also visible in the prestigious 'Truck/bus of the Year' award, which Company A has won with a ratio of 3:1 compared to Company B over the past decades. Yet, Company B is in a much better position to create products and services with a superior value proposition that can increase both the customers' and the company's own profitability. Company B has accomplished this by combining its historic focus of creating value for the customer, and all involved stakeholders, through innovation and manufacturing prowess to meet the changing market demands and diverse customer needs. This business mindset, and way of thinking, has been anchored within the organization and permeates all parts of the value chain imposed by a specific leadership focus enforced by decades of successful practice.

The sales growth, financial returns, and customer satisfaction outcomes delivered by Company B over the past twenty years not only reflect the presence of competitive advantage, but also captures sustainable outperformance compared to the close competitors in the industry.

This superior market position has not been achieved through defensive moves to protect existing advantages but is based on constant updating of current practices to continuously improve organizational processes (Nelson and Winter, 1982). Even though Company A has a distinct focus on manufacturing efficiency, Company B is able to develop product offerings with superior value propositions to important customer segments and accomplishing this with a productivity per employee that is double that of Company A. In addition, this is achieved despite the fact that Company A has ten times as many technology patents than Company B.

In other words, Company B has developed valuable adaptive capabilities that generate competitive advantage in a sustainable manner because they are unique, valuable, hard to imitate, and non-substitutable thereby fulfilling the criteria for sustainable competitive advantage according to the resource-based view (e.g., Barney, 1991; Peteraf, 1993). Even though the executives in Company A realize that they need to transform the organization towards a more balanced value chain with more emphasis on customer value, as expressed in various annual reports, they are unable to accomplish this. So, the advantage established by Company B is not attained through ownership of protected patents but by practicing dynamic organizational processes that present uncertain imitability (Lippman and Rumelt, 1982). That is, the causal ambiguity of the adopted governance approach makes it difficult for peers in the industry, such as Company A, to identify the essential success factors thus making any imitation attempts highly uncertain (Reed and DeFillippi, 1990). Continued efforts to develop these types of interfirm causal ambiguities (e.g., King and Zeithaml, 2001; King, 2007) can both enhance and sustain the implied competitive advantage over time. The inimitability of the organizational processes can also be enforced by the social complexity embedded in the adopted governance approach (Johnson and Regnér, 2009) engrained in the fabric of the organizational culture (e.g., Barney, 1986; Camerer and Vepsalainen, 1988). As a further observation, the comparative analysis provides support for the importance of a stakeholder perspective in the resource-based view (Barney, 2018).

Finally, the insights gained from this study also address some of the underlying arguments in the bourgeoning literature on servitization and product service systems. It is often argued that the introduction of advanced services in developed economies gradually replaces the importance of the tangible product in the buying process (e.g., Baines, 2007; Mathieu, 2001, Oliva and Kallenberg, 2003). The increasing emphasis on ‘value-in-use’ for customers and access to a

steady service where direct ownership of the tangible assets is less important are common arguments in this stream of literature. Accordingly, the importance of the product will diminish over time to eventually be replaced by service importance (Figure 5.2). However the current study observes that the ability to maintain efficient and high quality manufacturing remains important to shape the manufacturers' brand value. Hence, Company A emphasizes the manufacturing and engineering features of the product to accommodate changes in the demands including user comfort, digital connectivity and fuel consumption as well as regulatory, safety and environmental requirements (Figure 5.1). More importantly, we also observe the equal importance of high quality manufacturing capabilities in Company B where value adding services are successfully introduced through co-specialized development of the manufacturing and distribution capabilities (Figure 5.3).

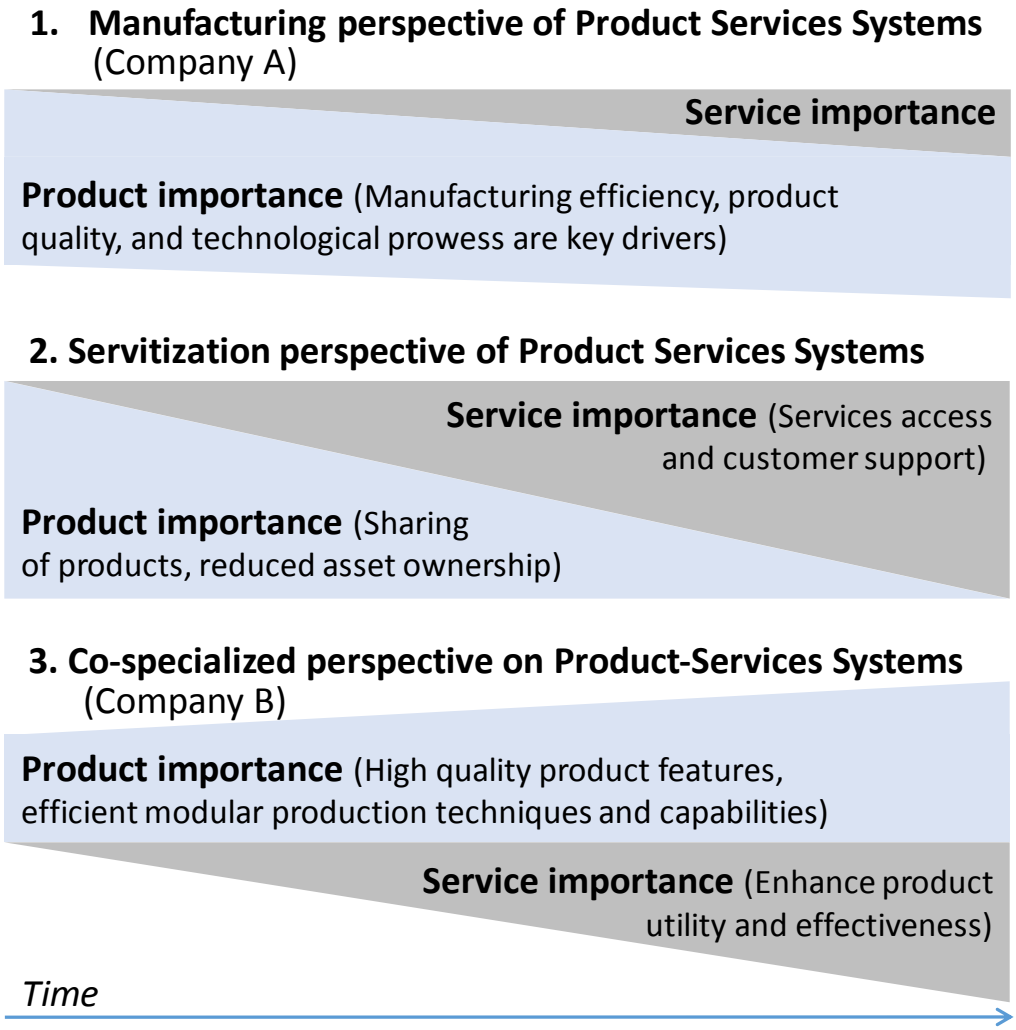

Figure 5. A Balanced View of Product and Service Importance

This pinpoints the fundamental need to develop a balanced business model with internal structures and incentives that consider engaged value-creation for suppliers, employees, managers, customers, and stakeholders at large (e.g., Bustinza et al., 2015; Kowalkowski, Kindström, 2015; Teece, 2010). This perspective emphasizes the importance for an integrated manufacturer to retain and manage the direct customer interface and act as trusted advisor to the customer (Neu and Brown, 2005). This provides access to needed feedback from the customers that in turn can help advance the manufacturing of more adapted and specialized products. For the same reason, companies with complex manufacturing processes often co-locate manufacturing and various R&D functions to take advantage from updated information exchanges between essential organizational functions (Ejodame and Oshri, 2018; Ivarsson and Alvstam, 2017). It also means that a service oriented organization like Company B will avoid intermediaries like independent leasing companies that serve their own product assets as opposed to the product utility of the final customers. This is in contrast to, for example, the U.S. truck manufacturing industry where the manufacturers often operate as hardware 'assemblers' selling their production to large finance companies who then have the customer contact (Johnson and Bröms, 1995).

CONCLUSION

This study juxtaposes two different approaches to govern forward integration from manufacturing to distribution. The analyses consider theoretical prescriptions from different theories of the firm and two different distributional and complex distribution typologies. The empirical literature does not advocate forward integration in downstream complex product and market contexts. Yet, our study shows that this is done in practice across the board by nearly all firms in the European truck and bus manufacturing and distribution industry, and it also demonstrates that it can be accomplished with success despite the adverse theoretical odds.

Compliant with the literature, our comparative case study finds that forward integration is attempted to resolve incentive misalignments associated with the double marginalization problem and moral hazards linked to the entrepreneurial efforts in distribution. In one case, we find that a conventional governance approach based on arguments pursuant to a directional distribution context is adopted but without observable success. In another case, we find that

adoption of a more balanced governance approach pursuant to a complex distribution context is associated with distinct advantages that are hard to copy by competitors.

Over time the European truck manufacturing industry has undergone a transformation where the tangible products in their generic forms have converged towards more differentiated applications where various servicing features have become increasingly important to satisfy specific customer needs. The two companies selected for the comparative case study both pursued a forward integration strategy in the same market contexts but based on different rationales resulting in the adoption of very different governance approaches.

In view of insufficient guidance on the governance of forward integration from contradictory economic theories, it is important for manufacturing firms that contemplate expansion into distribution and services to consider the type of market context they attempt to address. There must be a proper fit between existing resources in manufacturing and those residing in the integrated distribution entities. Open market interactions are imperfect and can create transaction costs, so the potential advantages from the hierarchical coordination of integrated value chain activities must outweigh the costs related to spot market transactions. However, attempting to exploit a directional distribution regime can dilute the application of vital downstream resources and capabilities along the integrated value chain over time. Hence, firms that base their governance on a directional distribution context may eventually find themselves in trouble when market conditions change and ascribe more value to the use of idiosyncratic resources in distribution. This is what we observe in Company A. Company B recognized the importance of idiosyncratic distribution capabilities and, therefore, govern the forward integration from manufacturing to distribution in ways that are more compatible with the evolving market conditions.

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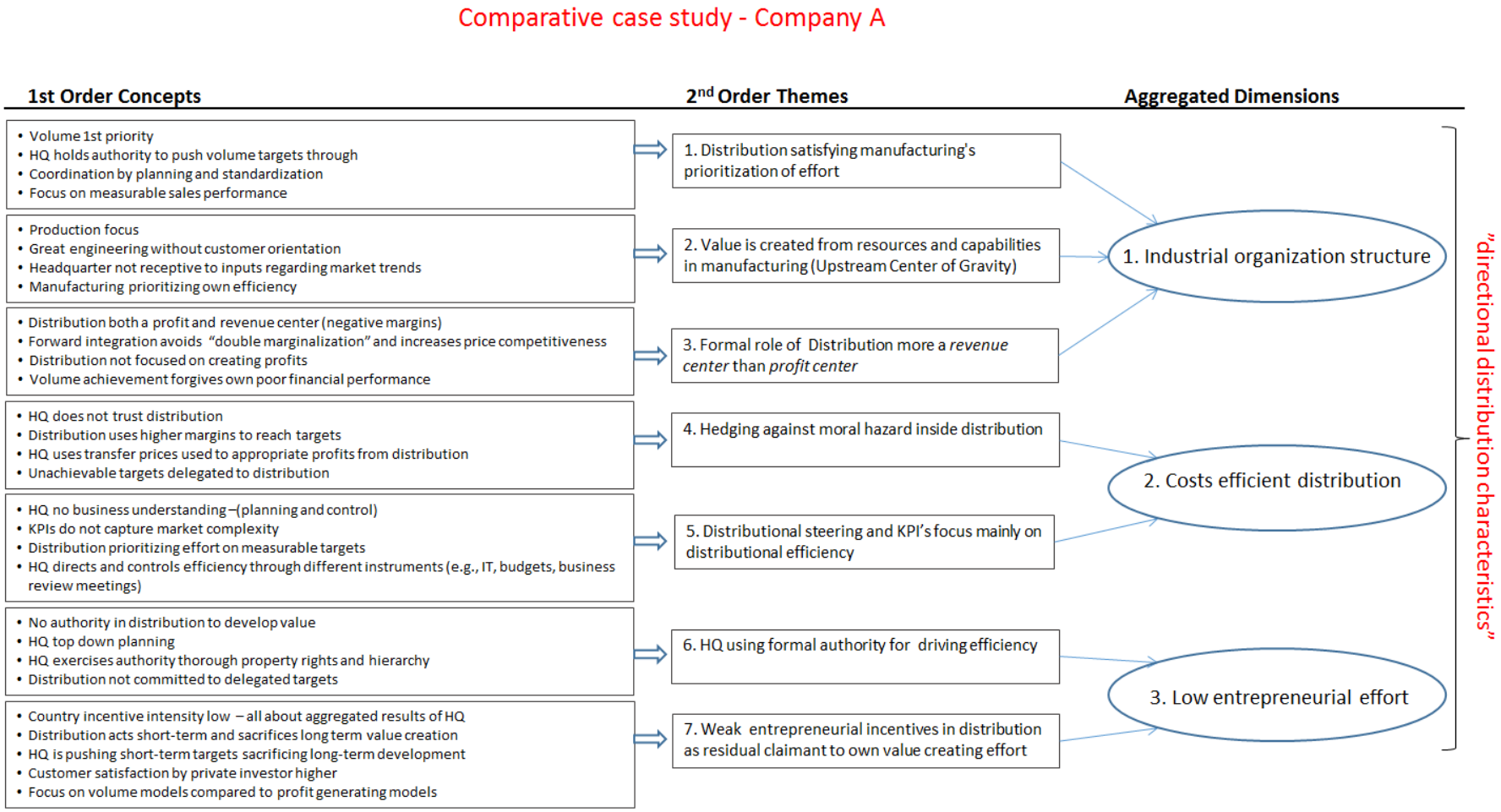
Appendix. Table 3. Research protocol questionnaire

Question nr.	Generality question	Value chain position	MD	FD	SD	ASD	Marketing/Product man	Primary question
1	1. Knowledge/delegation/s	HQ / Distribution	x	x	x	x	x	Are there any resources, capabilities or specific knowledeges along the value chain, that you would regard essential to success for the company as a whole?
2	1. Knowledge/delegation/s	HQ / Distribution	x		x	x	x	How does the company consider and integrates competences/knowledge between business units downstream to upstream?
3	1. Knowledge/delegation/s	HQ / Distribution	x	x	x	x		What is the formal status of your business unit (profit center, cost center, revenue center)
4	1. Knowledge/delegation/s	HQ / Distribution	x	x	x	x		How are goals and targtes delegated??
5	1. Knowledge/delegation/s	Distribution	x	x	x	x	x	Since you work in the "distribution" - what would you consider your prime objective as being? Is your focus on efficiency or value enhancing activities like "raising customers willingness to pay more"
6	1. Knowledge/delegation/s	Distribution	x	x	x	x		Are the specific targets delegated your business unit realistic ?(e.g., revenue, profits, units, market share, customer satisfaction targets, head counts, processes)
7	1. Knowledge/delegation/s	Distribution	x	x	x	x		What would happen if you said e.g. "I don't want to do that in my market - it will create a long term disadvantage"?
8	1. Knowledge/delegation/s	HQ / Distribution	x	x	x	x	x	How would you describe coordination between business units?
9	2. Incentives and pricing of internal transactions	HQ / Distribution	x	x	x	x		How is the price of the intermediate goods/service transferred between HQ and distribution determined
10	2. Incentives and pricing of internal transactions	Distribution	x	x				What happens to the profits generated inside Business Units - are they able to keep theese inside the BU and reinvest and recieve a bonus from the internally created results or are they appropriated by head quarters?
11	2. Incentives and pricing of internal transactions	Distribution	x	x	x	x		Do you achieve all your targets?
12	2. Incentives and pricing of internal transactions	HQ / Distribution	x	x	x	x	x	How are your incentive designed? (Strong personal performance? Or more aggregated and collective?)
13	2. Incentives and pricing of internal transactions	Distribution	x	x	x	x	x	If you have multiple tasks - how do you prioritize your goals (are there any "must" fulfill!)
14	2. Incentives and pricing of internal transactions	Distribution	x	x	x	x		Do you percieve the pricing of the intermediate products to be fair?
15	2. Incentives and pricing of internal transactions	Distribution	x	x	x	x	x	Do you experience other business units making decisions which imposes costs on your busines unit?

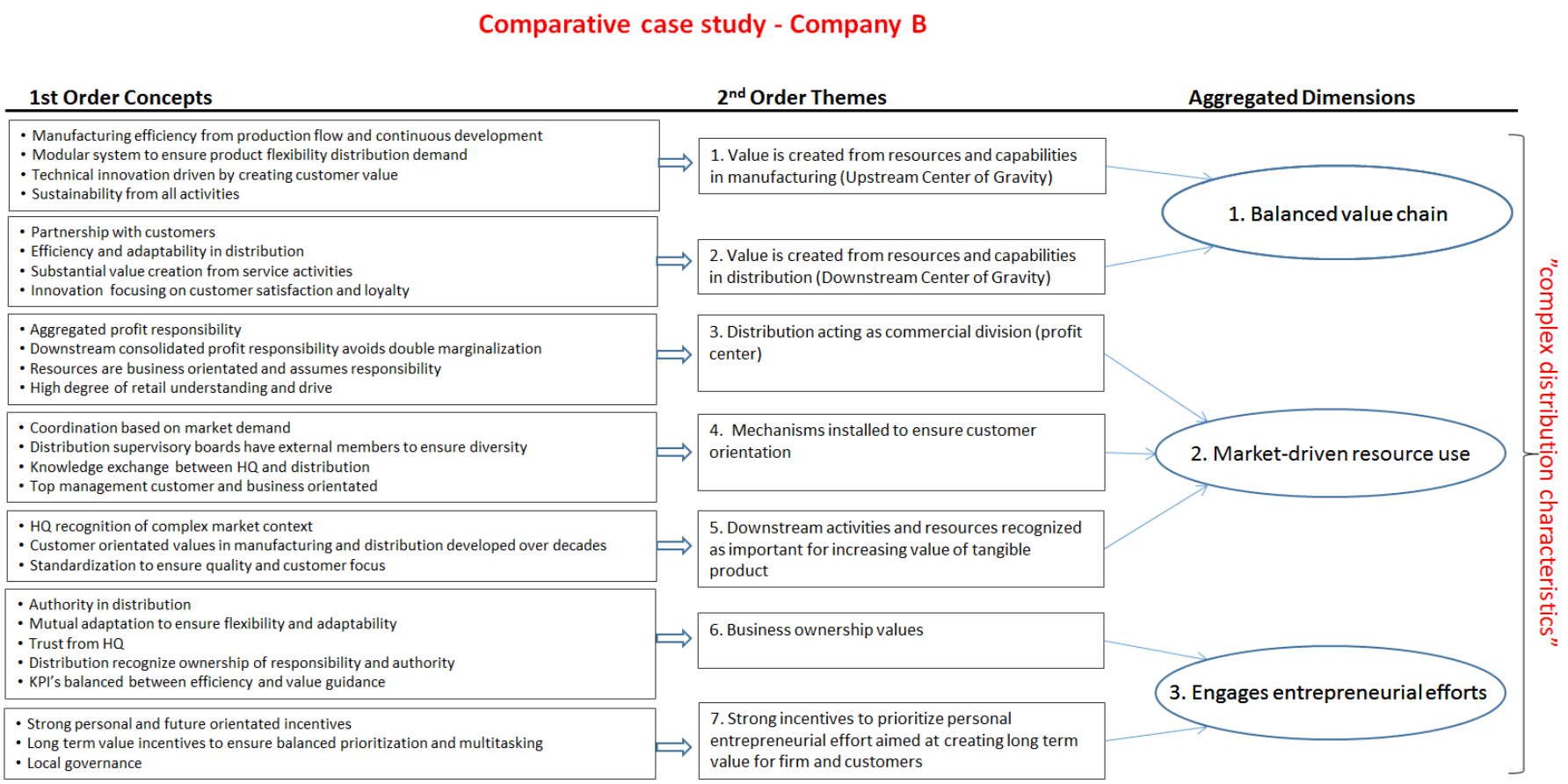
Appendix. Table 3 (continued)

Question nr.	Generality question	Value chain position	MD	FD	SD	ASD	Marketing /Product	Primary question
16	3. Authority use and monitoring of performance	Distribution	x		x	x	x	Would you consider youself better informed about the market and its requirements than your boss (and his boss) ? Do they sometimes make decisons which seems irrational form your point of view?
17	3. Authority use and monitoring of performance	Distribution	x	x	x	x		If you are the manager/responsible of a BU – how much authority is delegated to you – can you object (dismiss) these targets?
18	3. Authority use and monitoring of performance	Distribution	x	x		x	x	Do yo think any of the targets delegated are more important than others? -- why?
19	3. Authority use and monitoring of performance	HQ / Distribution	x	x	x	x		Does the headquarters use formal authority to delegate goals and prioritize effort?
20	3. Authority use and monitoring of performance	Distribution	x	x	x	x		Does your owner "use you" (i.e., excercising authority over the actions of your BU and your staff)
21	3. Authority use and monitoring of performance	HQ / Distribution	x	x	x	x		How is performance monitored?
22	3. Authority use and monitoring of performance	Distribution	x	x	x	x	x	How do you prioritize effort? (Using diagnostic control/KPIs or Guidance systems; core values, customer relationships ect)
23	4. Innovation and organizational dynamics	HQ / Distribution	x		x	x	x	How do your consider overall "company" innovation (how competitive is the company as a whole) e.g. Using specific knowledge between different units to function/cooperate?
24	4. Innovation and organizational dynamics	HQ / Distribution	x	x	x	x		What is the purpose of the company's Forward Integration? (Does it create any value like differentiation to product or is the focus on cost-savings – (Does Forward integration play a role in the business model??
25	4. Innovation and organizational dynamics	HQ / Distribution	x		x	x	x	Looking at the overall value-chain of the firm: "Does the company have any driving force inside the organization"? – (Anything inside the value-chain which the firm consider essential to it's existence, focus ect?
26	4. Innovation and organizational dynamics	HQ / Distribution	x		x	x	x	How open is the "driving force" to cooperation across different business units? Different inputs/needs/suggestions (product needs, improvements), changes in the market?
27	4. Innovation and organizational dynamics	HQ / Distribution	x		x	x	x	If the company were to sell only trough market transaction – do you think that the firm would have adapted better to uncertainty and changes?
28	General Performance Evaluation	HQ / Distribution	x	x				Looking at general numbers like ROS, ROE; ROA; How would you estimate the performance of the company as a whole?
29	Integration costs	HQ / Distribution	x	x	x	x	x	Does integration give the compay any disadvantages? Which (does integration actually neutralize a market which could be correctional?) Or, has the takeover actually diluted any competencies/advantages?
30	Integration rationales	HQ / Distribution	x	x	x	x	x	Does Integration give the compay any advantages? – Which?

Appendix Figure 6. Additional data illustrating the transition from data to concepts to theoretical themes and final aggregated dimensions.



Appendix Figure 6. (continued)



Appendix Table 4 . Detailed illustration of transition from data to first order concepts and second order themes, Company A and B

Company A		
Second order themes	**First order concepts**	**Illustrative quotes**
1. distribution satisfying manufacturing's prioritization of effort	HQ holds formal authority to push volume targets through	The headquarters are really, really strong. They have really a lot of power. And then for sure, we have the sales companies but at the end, the decisions are taken in the headquarter. For example, the planning. If you have the budget planning and the sales companies tell you or one sales company tells you, "Okay, I try hard but I'm just able to sell 5,000 vehicles." Then usually the headquarters tell us, "No, no. We need 5500 or 6,000. Just deliver.
	Coordination by planning and standardization	if you look in history, I will say again, historically a little bit too much focused on volume of filling the production, yes. [...] Because being very, very, very frank, some people did not have the right focus. We haven't been, and we are still not good enough in being commercial. We have been much more driven by engineering and production, and we have to break this up more and more and see the first results, but are we there? No!
	Volume 1st priority	Well, I think as long as I can evaluate, that the understanding has grown that after sales is creating a bigger part of perception than sales. And, I myself, I'm telling everybody that we have more than five million customer contacts every year in after sales. So, I think the understanding that after sales is driving customer satisfaction even more than sales is there. On the other hand, we are probably historically we are coming from a situation that we are producing something and then we are trying to push it out in sales.

Company A		
Second order themes	**First order concepts**	**Illustrative quotes**
2. Value is created from resources and capabilities in the manufacturing (upstream centre of gravity)	Manufacturing prioritizing own efficiency	And this process is still existing. [..] but not so for the [special requirements] and the modification. This is out of this focus. Completely out of this. So for this [special requirements] and modification, we depend on their goodwill [of the production]. [..] And they have KPIs, of course. Yeah? The KPIs, and it's called the direct runs. And they have KPIs and, of course, the payment. How they reach their figures for the direct runs. And if there are a [special requirement] or a dammed fucking modification. Sorry for these words. [..] They lose money, and they lose their KPIs if there is a bloody, fucking [customer requirement] destroying their KPIs. Yes. That's the problem.
	Production focus	It may be a concert of production, research and development, and a very weak power of sales, and very weak power of our complete sales organization and the sales board. According to me on my end, it's a very technical and very facility and production facility-driven company and not market-driven company. It has been like this since the past
	Great engineers without customer focus	We are a company of great engineers. We make fantastic engines, and from those engines we put them into a truck, and then once we sell the truck, as far as the feeling you get and when you listen to people in headquarter, once we've done that, that's it. For me, they forget there's a customer.
	Headquarters not receptive to inputs regarding market trends	I would rather say it's our damn task to become the voice of the customer. It's also the task for our organization to really figure out by being close to the customer, to understand the business and their needs [...] And here talking more precisely here, we have definitely room for improvement and we are not the benchmark in the industry.

Appendix Table 4 (continued)

Company A		
Second order themes	**First order concepts**	**Illustrative quotes**
3. Formal role of distribution more a revenue center than profit center	Distribution not focused on creating profits	Yeah. I mean at the end it's always the volume which is more important than the margin [..] and that leads to an enormous pressure on the sales to fill the factories and at the end-- so as a sales organization you have no chance to let's say make a high margin or high price strategy at least for a certain period of time because at the latest three months later the production will suffer and then everybody says, oh, we need more orders. Please fill the factory.
	Forward integration avoids "double marginalization" and increases price competitiveness	Because we need volume, because we'll have to feed the plants in many cases. Okay? And on the PCDs [Private Capital Dealers - non-owned distributors] they play with the margins. They need higher margins to support all the structure. We don't have that need in that sense. We are more aggressive on commercial conditions, through our sales representatives and they probably PCD they are more profit-driven, not volume-driven. Because they don't have a plant to feed.
	Distribution both a profit and a revenue center (negative margins)	Exactly. So it's not its own profit centre. And it still isn't. Because many of our NSCs [distribution] they have a minus in their business. And that means that every extra tractor they sell, they have a worse result. Which is of course a terrible situation for the people in the NSCs who have a bonus on the result of the company.
	Volume forgives own poor financial performance	Well, it's clear. If managers in the past in the sales organization were fired, they were not fired because of the margin, they were fired because they didn't reach their market shares and their volumes.

Company A		
Second order themes	**First order concepts**	**Illustrative quotes**
4. Hedging against moral hazard inside distribution	HQ uses transfer pricing to appropriate profits from distribution	If you make a loss with every truck you sell, you make a bigger loss the more trucks you sell. And if your main target is to have a bigger population out there, your incentive has to make a bigger loss. That means you don't have any-- no company will work that.
	Distribution uses higher margins to reach targets	Yes. I mean, they're afraid of giving out the money that the salespeople will waste it. [..] Yeah. And that again is product-focused company because you build a product that customers should spend as much money as possible for, and you don't believe that a customer only pays for what he wants. So if you say that they're wasting money on customers, shows you that that is basically the idea, is that our product has a defined value and the customer has to pay for it. Whereas another approach would be the customer defines the value and we need to produce according to it. And that is a big difference which in Company A, I think it start to get understood. But that was something that was not understood in the past for whatever reasons.
	Unachievable targets delegated distribution	We have these targets [budgets] that is, in most of the cases, a bit, let's say, dreaming, wishes, extreme wishes. [..] a plan that was really not much consistent with the real needs of this country. Volume and profits, let's say volume, margins, and costs, operating costs because, clearly, the first thing is clearly price and volume of what you sell. The other thing is the cost of the organization. That is, for example, the cost of marketing. Here, in this country, we spend 0.35% of the turnover in the marketing expenses. It is one-third percentage of what they spent in other brands. So marketing costs, it is close to zero because we need to pay other costs.
	HQ does not trust distribution	Well, it's clear. I mean they think the more space they give outside to the sales departments and the NSCs, the more will be given to the customers. That is the traditional fear they have. They have no trust in the sales departments and let's say as a CFO, of course, it may be dangerous to give too much space to the sales department because the sales guys somehow think, "Ah. There is still a positive margin so I can do the job." So the logic behind is to put maximum pressure on the sales organization in order to get the best possible result". To a certain extent, that may be right but on the other hand, of course, you frustrate the whole sales department, yeah? And in case of the (country) organization, I can say, it was already difficult from a (country) point of view to accept these budgets but what we had to do is we had to put down these budgets to our truck and bus centres. So let's say if we in our budget had already a negative margin of let's say minus two percent, yeah, then of course our (sales points) would have a budgeted margin of minus four percent or five percent, yeah? Meaning that the (sales points) almost had no chance to generate positive margins also in the small segments where you normally earn money.

Appendix Table 4 (continued)

Company A		
Second order themes	**First order concepts**	**Illustrative quotes**
	HQ no business understanding – (planning and control)	And it was no discussion about the product because those guys [HQ], they don't talk even about product. They don't know about the product. They know about PowerPoint know about Excel. They know about market share, economics, but they don't know[the market], this is the biggest issue and I think that it relates not only to [Company A]. That companies from engineering company going to pure financial companies.
	Distribution prioritizing effort on measurable targets	My opinion is that the soft factors are probably the enablers to reach the financial figures. But if you're talking about planning, budget planning or whatever which planning, it's all about just hard facts and hard KPIs. But your customer satisfaction increased. That's good. We have never talked about it. So all about just sales volume, margins, operating profit, bottom-line effects, overhead costs, and it's not just about the finance guys. It was never about customer satisfaction, customer first, whatever, improve the quality. For sure, it's important and it was good but you can't really measure it. So, therefore, it was-- and especially in the headquarter, it was not the big part of discussions
5. Distributional steering and KPI's focus mainly on distributional efficiency	KPIs do not capture market complexity	the main outcome was that the market say, "Okay. The central organizations ask too many question about KPIs more or less, too many different KPIs. And we don't have, more or less, the possibility to decide on our own how to steer the market or how to deal with the market." Let me put me that way, that the markets claim for more entrepreneurial possibilities, more or less.
	HQ directs and controls efficiency through different instruments (e.g., IT, budgets, business review meeting)	From my perspective this is the difference between customer focus companies and typical old-school companies. [...] Right now we're talking [in business review meetings] 60% of our figures and 10% of our HR and customer orientation. But I think in major companies and also in companies with a healthy strategy it should be at least half, half to say, "Okay, what are we doing for the customers? What should be--do the next steps? What is the task of the country and the headquarters as well"? And here we initiated the customer first project, which is really--has really great success. [..] whenever the guys outside of the headquarter have this experience day by day then they see, okay. Something is moving and something is working, otherwise, it's just a PowerPoint presentation. And but, again, coming back to your question. I think, yes that's right, but I think the presentation of the business review is not actually it's not the right one because we have to change. We have to take much more about the customers. The needs of the customer and what can they do in the outside of organization. What is the task of the headquarter?

Company A		
Second order themes	**First order concepts**	**Illustrative quotes**
	Distribution not committed to delegated targets	And the thing actually that really annoyed me, but I think a lot of my colleagues as well worldwide, was the overall targets for the trade margins [accumulated (manufacturing + distribution)] were more or less achieved in the last two, three years, yeah. But all the local companies, they had no chance to achieve their local target due to a different set of tension in the budget of the local companies and in the budget of [Company A] sales overall.
6. HQ using formal authority for driving efficiency	HQ top down planning	Yeah, I think. Because I think the horrifying facts would be actually put into the faces of the same people much before. Now, we are a part of the factories, so they can ask us or demand us to push the old product into the market. And then be not fighting against in the same way as an independent dealer would have done because he would have said, "This I cannot sell. And if I have to take it to a local body builder, I'm not going to pay for it with my money. You have to pay, dear Mr Factory. With your money if I should bring it into the market." So it kind of been a sleeping pillow here that you actually see that because we are the prolonged factory people here, we cannot, in the same way, explain the company that they have to produce local.
	No authority in distribution to develop value	Bureaucracy, I would say is one of the first things which would come in my mind that we have a lack of flexibility to act properly in the market, to be closer to the customer, to be more customer orientated, and also to be busy more with ourself than really to gain more efficiency out of what we want to achieve or where we want to go. I think this is one of the, for me, what I've discovered in the last years, one of the key issues, less flexibility for ourselves too much steered from headquarter side.
	HQ exercises authority through property rights and hierarchy	[Company A] is for me very unsophisticated [..] in that they still use the budget as the authoritarian tool. [..] you've got too many of these people that are just spread sheet driven, that are traffic light drive, that are just box tickers. They don't understand the business.

Appendix Table 4 (continued)

Company A		
Second order themes	**First order concepts**	**Illustrative quotes**
		The following are analysis of actual bonus schemes and condensations of conversations
	Country incentive intencity low – all about aggregated results of HQ	It's really difficult because the major points in the targets-- I mean, you have these three columns, yeah, of the remuneration of the bonus system. And one column is personal performance. And the major part of the personal performance is that you reach ROS (Return on Sales). And at least in the last five years – and that is not only valid for (country), that is valid for all countries – I would say that at least 90% of all (integrated distribution) companies did not achieve their ROS target. Yeah, and there were high differences between the actual value and the budgeted values. And so to answer your question, the possibility to have impact on your own bonus, is rather limited. You're talking about one-third. And of these one-third, more than half was a return on sales (ROS). And the return on sales, as I said, was not achievable.
7. Weak entrepreneurial incentives in distribution as residual claimant to own value creating effort	Country incentive intencity low – all about aggregated results of HQ	Aggregated. One third is targets that they can change themselves. Of these targets, we have profitability which only can partially be influenced locally. You have market share which also you can argue can only partially be influenced locally because we have a lot of-- it depends on transfer price in the products you're getting. So I would say that the local performance and that is a complete estimate from my side is maximum 5 to 10 percent of the whole incentives they're getting. So 90% is out of their hand. It basically means that 90% of the bonus is out of their hands so that they [country MDs and FDs] do not reject so often if they get something because it doesn't matter anyway.
	Distribution acts short-term and sacrifices long term value creation	We are always focusing on the volume side, but we are giving by far too low attention to the staff and to the customer. We are talking about the customer but really we are hunting the invoice. We are hunting the volume, and we are acting short term, but staff and customer is basically, in my eyes, a contradiction because, here, you have to work extremely long term, but we are always very short-term focused
	HQ is pushing short-term targets sacrificing long-term value creation	Interviewer: [Do] you think that HQ is so interested in pursuing their own interest that they actually impose costs or transaction cost on your branch? Interviewee: "If not, we shouldn't be in this situation today. It is like that."

Appendix Table 4 (continued)

Company B		
Second order themes	**First order concepts**	**Illustrative quotes**
1. Value is created from resources and capabilities in manufacturing (Upstream Center of Gravity)	Innovation driven by creating customer value	We have so much information out there. We need to get them in. So we changed the focus from inside the traditional attitude – we know best what the customers need – and then with this information, we could get in gradually from 2005 onwards in analyzing and then "Oh, now we know the reality of the customer," and we could with this information just sitting together with a customers and also go through all the information, all the facts, and say, "What can we improve now?" Improve from our side in order to improve the business. So we said that the focus was from outside in and that was a paradigm shift in the company.
	Sustainability from all activities	Annual reports from company B (2000 to 2019) We are not an extension of the factory or anything. I mean, I'm thinking that it could be possible to sell commercial operations. That could be an own company. I mean it shouldn't be completely disconnected but it could be.
	Manufacturing efficiency from production flow and continuous development	Second one is we always refer to how we are let's say, flow-oriented when it comes to our internal flows, when it comes to our production
	Modular system to ensure product flexibility distbution demand	Today, when one orders a truck it takesbetween two and three weeks response time and we have an enormous flexibility in the production. We never build on stock because we can't do that with our Lego system. It's impossible. We need to know the final customer. And first, when we know where to define the customer specification, we start the assembly process. So the assembly process is going up and going up and down and we're never build inventory [...] so I don't think-- the factory is not sort of coming and disturbing the business and such.

Company B		
Second order themes	**First order concepts**	**Illustrative quotes**
2. Value is created from resources and capabilities in distribution (Downstream Center of Gravity)	Partnership with customers	It's fantastic and I say today that it is what [Company B] what has done. All industrial operators have to do it and have to understand that it goes about to be connected with the customers and to find a formula of a win/win. Win for the customer, win for us and that it goes back to the culture of the company.
	Efficiency and adaptability in distribution	It's you have to convince people but you have to send out people to train them to widen their horizon. That was why some of them went to ISS in Sweden and also in Norway then just to learn this, how to sell services to get the concept and they were enthusiastic when they returned and said, "Okay. Here. Of course, we have to go in this direction," because there's so many customers asking for these type of services. So the demand was already there in the market. For us, it was how to structure products so we could meet the demand in the market.
	Innovation focusing on customer satisfaction and loyalty	We are in a favorable position today in which our customer satisfaction measuring, any way we measure at either the heavy truck surveys or the [Company B] specific model we are using, anything, do show high customer satisfaction from our service and sales, let's say, performance looking into our global geography and having this customer satisfaction that is, of course, a requirement for in a pre-conditioned for also running the business profitably. And we can't work on either/or but having that as a complete obsession of our customer let's say, customer first and customer satisfaction, that we have said is the place here for actually being able to be more profitable in our retail operation.
	Substantial value creation from service activities	You have to convince people but you have to send out people to train them to widen their horizon. That was why some of them went to [company]in [country] and also in [country] then just to learn this, how to sell services to get the concept and they were enthusiastic when they returned and said, "Okay. Here. Of course, we have to go in this direction," because there's so many customers asking for these type of services. So the demand was already there in the market. For us, it was how to structure products so we could meet the demand in the market.

Appendix Table 4 (continued)

Company B		
Second order themes	**First order concepts**	**Illustrative quotes**
3. Distribution acting as commercial division (profit center)	Downstream consolidated profit responsibility avoids double marginalization	But the underlying part of what is I would say if you look into commercial operation, which again is a completely standalone P&L, all from the consolidation of the result of commercial operation down to each and every workshop, down to each and every bay in the workshop has it's own P&L.. So we are really much running our commercial operation as if we were a [company]holding [..] as if we were let's say a separate entity within the company when it comes to our P&L. We have transfer price modeling within industrial to commercial based on base cost.
	Resources are business orientated and assumes responsibility	So it's for me and I move even more in that direction that we don't have a headquarter or a sales and marketing or central function steering and telling what the market should be doing. These are stand alone. These regions have a very strong saying when it comes to let's say to putting demands on let's say supply from factory, not only trucks, buses, parts, but when it comes to sales tools, when it comes to ordering systems, when it comes to let's say our financial systems in the sense that they are a gatekeeper that when things. Gatekeeper in two ways. That they put the demands into the supply function here of all these services and supports and if the other way around, when things come this way, they can also be the gatekeeper say that, "No. This is not ready. We will not do it now because of X, Y, Z.
	High degree of retail understanding and drive	And that was the first step to move from an industrial engineering industrial company developing and manufacturing hardware into starting to develop services, the software, the service products. And we continued with that and it took time for us to learn but it also took time for a dealer organization-- we said that the dealer organization, the dealers out of the various regions in the country, they should be independent.
	Aggregated profit responsibility	The whole [company B] is more focused on profit than volume. Not that volume doesn't matter..

Company B		
Second order themes	**First order concepts**	**Illustrative quotes**
4. Mechanism installed to ensure customer orientation	Top management customer and business orientated	What we had to do is that the engineers, they take the product development and the manufacturing and then we separated this organization, sales and service organization, we put businessman here [in the HQ and distribution]
	Knowledge exchange between HQ and distribution	Because then if you just have-- that was to reduce let's say the bureaucracy and bureaucrats because then we get the pressure from the real businessman into the organization
	Coordination based on pull from market demand	We have had a-- this is our thinking when you go from outside in and you just plan according to reality, no according to targets.
	Distribution supervisory boards have external members	We are moving towards bigger and bigger independence from the headquarter because for me this is how should we see. It is a counterweight of the regions, let's say, running everything that there somewhere is a body which is, let's say, in some way being a counterweight and, let's say, so that it doesn't become for me too much dependent. If I have a-- if I have a region director of one profile four years, five years then comes another. So the boards are, let's say for me, an independent organ which respond to me.

Appendix Table 4 (continued)

Company B		
Second order themes	**First order concepts**	**Illustrative quotes**
	HQ recognizes complexity of market context	Because you do what they ultimately-- you will enable, enhance, promote, drive that there will be a complete—how should I put it? An enormous devotion towards driving the service business further. Because on the vehicle yes you can make X or Y percent more or less. The gross on the vehicle is limited. It's there but it's not the big game changer. It will move a little bit. But for me, the big one is that you can really push the front end to take the right decisions when it comes to, let's say, what segment to sell to, what customer to sell to, what kind of, let's say, contracts you run that the difference for him to making a contract of, let's say, three years or five is much bigger than any other profitability in the operation. So he or she would be completely instrumental to, let's say, to increase the top line of sales of parts and services when having the full margin of the operation.
5. Downstream activies and resources recognized as important for increasing value of tangible product	Customer orientated values i manufacturing and distribution	They're very much connected to, let's say, also commercial operations. So we have many forums, you have some process meetings, they do go to the markets a lot, we have internal coordination meetings here. Let's say, some decisions are very jointly when it comes to development of new products and services. They have a huge muscle today when it comes to connected services, all the part there when it comes to digital services for the future, which we haven't touched upon, but, of course, is a game-changer coming in that we're working a lot on. When we talk our supplier, our supplier is Sales and Marketing.
	Standardization to ensure quality and customer focus	And I still think we're working in a standardized way within [company B] to a high degree. It could always be better but that's if we compare us with others. I still think that we have some kind of core values in the bottom where we try to do out blue prints and our way of working in a good way. And if we go from here and then you go to Africa or to Asia and speak with a managing director or to a plant director, same thing-- that there is something that is the flavor of [company B] that you will meet and for me that means that we have some kind of standardization way of working and how we are doing things the [company B] way. Of course, there's always a spread on this but I think our let's say- spread- is our bandwidth, it's a little bit smaller than other companies, that is what I'm trying to say.

Company B		
Second order themes	**First order concepts**	**Illustrative quotes**
	Authority in distribution	Interviewer, "is there any kind of say hierarchical authority between the outside organization and the headquarter?. Interviewee: "No. That is what we do at the local board of directors. They play a very important role in order to give a chief executive here [country MD] the authority or support to go against some of the bureaucratic people which you have in big industrial organization. So they're there to say no.
	Mutual adaptation to ensure flexibility and adaptability	So if we think we can present that this will not be good for [company B], then we try to convince the factory or headquarter that this will hurt like Hell, so let's not do it. And if they-- if we have good arguments, they will say you're probably right. Yeah, that we behave like one-- like we're not like we are one here and one here. We also talk about breaking down the silos. Where silo's like I don't give a shit about how they're doing in the other department. And that we try to not to wear this-- the big [company B] cap. Is this good for the company? It actually happened that we also shift money between the departments. That I cannot-- I shift some money from the market of the truck into the service contract to make the service contract more attractive. So that is very important for the team, and vice versa.
6. Business ownership values	Trust from HQ	We scrapped the budget. The budget is a disaster for a big company because it goes about blaming each other and then the controllers are coming out in the production saying, "Okay. But you had the target this and that." It's just nonsense. You consume a lot of energy inside a company in blaming each other. So we said simply, "Okay. We make a quarter." We close the books per quarter and then we make it forecast the coming three quarters then we had 12 months rolling for cost. The whole time. Based on what we have seen during the quarter. It has been-- there are people thinking in silos but far less today than when we started with this and when we started with the rolling 12 months or four quarters system, a real quarter plus three more, we got rid of so much of internal blaming in the organization and if you set a target for a body at 12 months at what you have now, you can be absolutely sure that the market is overshooting or undershooting in 12 month's time but you still continue to work. And you look upon the year as the planning period but we say it's the rolling activities what we can forecast. If we come into the fourth quarter if we had-- so we have to do the third quarter. It's very interesting to know what is now the prediction of the first and second quarter next year in order to plan.
	Distribution recognize ownership of responsibility and authority	I don't give a shit about that (volume). If I don't have some kind of, we talk about [local] consolidated picture on that, we sell this truck to this customer, we can earn money in Denmark in this business unit then I leave the business. Right or wrong, but I mean I would never give away a truck if I don't see that there is a potential in the long-term to have a profit out if this customer in Denmark because I don't know the margin in the factory.
	KPIs balanced between efficiency and guidance	You need to have somebody [in the distributuon] that is sleepless. Why he only day three has 60% of a workshop full, that takes the phone in the morning, runs through everything and makes the calls. Gets out of the comfort zone and changes his behavior from being the good technical guy to be the-- I won't say particularly-- you don't need to be the crazy salesman. But to be the proactive work of changing your behavior of, let's say, doing things right which is always a fundament. But let's say to be this interaction with the customers to bring them in. And this is something that performance management, in my opinion, helps to overcome, to, let's say, to drive in this way. It's a balance because if you're sitting like some companies will be doing, that's extremely much. The worse it gets, the louder you scream. The more KPIs you ask, and the more pressure you put-- if it worked, it works for a short time. But something breaks, something is hidden somewhere else, something is not addressed so it's sustainable over time.

Appendix Table 4 (continued)

Company B		
Second order themes	**First order concepts**	**Illustrative quotes**
7. Strong incentives to prioritize personal entrepreneurial effort aimed at creating long term value for firm and customers	Local governance	Yeah, because that's the most difficult part in all of this is the behavior and change management. That nobody else could or should, or have an opinion about. And then they come back to what we said before. The entrepreneurship, then their feeling of "being" their business and everything, call it, is what runs this behavior and our capacity to do these changes. (33% of total incentive)
	Strong personal and and future orientated incentives	How we measure performance, how we set the targets, how we set this bonus giving, what is that based on? One is company, let's say if you look at business unit managing director we'll have quite a high variable. Yes. I mentioned before that dealers have a slightly less percentage, but if you're a country manager, if you run Germany, you will have quite a high relative percentage of incentive.
	Long term value incentives to ensure balanced prioritization and multitasking	We have nine focus areas which are, let's say, agreed on a central level on a regional level that these nine focus areas just must be there. - there are nine focus areas of where we need to. One third is [company B aggregated], one-third is the six-year and the one-third short. These are always related to these nine. [...] It goes beyond that because when that MD leaves-- if you have a managing director one country, and he leaves to a next country, if he continues the assignment of a similar task, he will, for the first two years, gradually still have, let's say, incentive schemes from the previous country.

CHAPTER 6:

CONCLUDING REMARKS

1.1 Summary of Key Findings

In advanced economies like the European Union, services have become increasingly important (EU Commission, 2017). Despite the increasing importance of services, traditional manufacturing of tangible products remains an important base for adding services. CEO of Royal DSM Feike Sijbesma (Kindström and Kowalkowski, 2014, pp. 96) is quoted expressing the importance of manufactured products: "people say we can survive without manufacturing, that we can have a service economy. But we can't be only about hairdressers and launderettes. An awful lot of services now are linked to manufacturing." While the strategy to economize on the interdependency between manufactured products and downstream value adding activities can be traced more than 150 years back in time, the choice between markets and contracts versus internal hierarchy and governance remains a fundamental issue. This become visible when boundary theories (often) provide conflicting recommendation with respect to the decision to integrate forward from both manufacturing, and the observable performance differences between forward integrated manufacturing firms (e.g., Benedettini et. al., 2015; D'Aveni and Ravenscraft, 1994; Gebauer et al., 2005; Harrigan, 1986; Neely, 2008; Oliva and Kallenberg, 2003; Visnjic et el., 2016). In the light of the performance differences realized by firms that pursue the same forward integration strategy, the overall objective of this thesis has been to understand the underlying theoretical reasoning and gain deeper insights into the actual governance of forward integration – as practiced by major manufacturing firms that compete in turbulent contemporary markets. This inquiry has been guided by the overarching research question: *how do forward integrated manufacturing firms effectively govern their integrated distribution activities under different market conditions*?

To understand the forward integration of manufacturers into distribution and the governance of these interrelated activities in its wholeness, the thesis built on different economic theories and gained detailed field insights using a case study methodology. This has been done by combining perspectives from firm boundary theory, resource allocation decisions, investment

and incentive structures, management accounting, and organizational theory. These constitute the theoretical arguments any executive or corporate manager must (or will) consider when contemplating the forward integration decisions. The first two articles (chapters 2 and 3) present conceptual studies aimed at creating the theoretical foundation for understanding long-linked value chains, the issues/challenges associated with forward integration, and the subsequent governance of the integrated firm. The third and fourth articles (chapters 4 and 5) present single and comparable case studies of two forward integrated manufacturing firms competing in the same industry, displaying different performance outcomes. The following briefly summarizes the key findings from the four (related) studies.

Chapter 2 (study 1). This first conceptual paper analyzes value chains and the economic integration rationales adopted in the analysis. The significance of technological differences that separate different sequential industries are outlined, as are the implications for intermediate product markets and how the transition from spot market transactions to long-linked technologies change the interdependency between different stages in the industry value chain. In particular, the relationships between a manufacturer, the distributors, and final end-users were analyzed and distilled in two contextual distribution typologies: directional and complex distribution. These two distribution types illustrate important differences with respect to investments in idiosyncratic resources and capabilities, and the plasticity of these idiosyncratic assets. This has implications for the manufacturer's exposure to moral hazard and/or the need to incentivize difficult to observe entrepreneurial resources and capabilities located downstream along the value chain. This presents essential coordination challenges that are very different in a downstream trading relationship compared to an upstream supplier relationship where incentive misalignment can be very different. With segregated ownership, the manufacturer uses different contractual coordination tools to minimize the transaction costs associated with this long-linked interdependency. This has implications for the decision to integrate forward.

The paper argues that forward integration into directional distribution, as confirmed empirically, is a more straightforward proposition and offers (fast) economic advantages. These advantages relate in particular to reduction of shared provisions with the distribution and reduction of moral hazards with improved incentive alignment. A better alignment of incentives between two sequential monopolies has implications for the manufacturing firm when economies of scale in the manufacturing process must be realized to stay competitive.

In contrast, forward integration into complex distribution, presents very different coordination challenges for manufacturing firms. In this context, value creation and competitiveness in the final markets come from the application of idiosyncratic resources and capabilities located downstream along the value chain. In this distribution context, value creation is not simply a question of optimizing the manufacturing processes by applying existing knowledge (Barney, 1999; Demsetz, 1988; Winter, 1988), but to exploit opportunities that reside outside the manufacturer's existing resources and capabilities. This has implications for the economic boundary theories that provide guidance to the manufacturing firm's decision to integrate forward. In fact, these theories often provide conflicting arguments. This is where the advantages from one theory, e.g., industrial organization or transaction cost economics, at the same time will dilute the incentives for distributors to engage important and difficult to observable effort related to the use of idiosyncratic resources and capabilities. In short, the manufacturing firm in its effort to reduce incentive misalignment might destroy the very same value creating incentives that exists inside the distribution. This paradox to incentivize downstream business units is also observed in the more recent literature on servitization (e.g., Benedettini, et al., 2015; Gebauer et al., 2005; Oliva and Kallenberg, 2003; Visnjic et al., 2016)

Chapter 3 (study 2). Building on the differences between the two distribution types, directional and complex, this paper analyzes the different governance implications following forward integration. Before forward integration, the manufacturing firms rely on two different contractual mechanism, self-enforcing or residual claimant, to align long-linked interdependency and incentives towards the distribution. The most important factors separating the two distribution types – and subsequently the interdependency and coordination differences between the manufacturer and distribution – are the consideration for value adding activities stemming from idiosyncratic resources in distribution that remain unknown to the manufacturer. While forward integration can provide more accurate monitoring and metering of moral hazard, it can also create competitive advantage from the added value potential of the final product complexity. Forward integration with the substitution of contracts for hierarchal governance must be able to accommodate the different requirements of the two distribution types and their contexts.

The paper argues that in a directional distribution context of sequential monopolies, incentive misalignment from double marginalization and moral hazard issues can readily be

resolved through forward integration – as argued and shown in the empirical literature (e.g., Anderson and Schmittlein, 1984; Brickley and Dark, 1987; Kosová et al., 2013; Woodruff, 2002). The internal structures are used to reduce incentive misalignment using effective coordination mechanisms based on planning and standardization of processes. By using organizational structures where the manufacturing business takes a formal role as a profit center and the distribution more as a revenue center, the authority to delegate, coordinate, and monitor to mitigate costs of moral hazard is consolidated with the upstream manufacturing. The successful operation of this kind of long-linked interdependency retains to the organizational center of gravity with the upstream manufacturing headquarters. Turning the focus on governance of forward integration in a complex distribution context, it becomes essential to address the value created in final market for end-users derived from idiosyncratic resources and capabilities in distribution. The substitution of contracts, using residual claimant mechanisms with hierarchal governance under forward integration, therefore requires fundamental different governance instruments; this reduces the potential incentive misalignments between manufacturing and the integrated distribution activities. To utilize idiosyncratic resources and capabilities in distribution, responsibility must be delegated to those that have the competences to engage these. It also means that appropriate incentives must accompany the delegated responsibility, which also leads to the creation of 'real' downstream profit centers. As this may take away power from manufacturing as the integrator and property rights holder, it will eventually move the center of gravity downstream towards a more balanced authority between manufacturing and distribution to the benefit of innovation along the value chain.

In summary, manufacturing firms that integrate in a directional distribution context provide effective monitoring and incentive alignment are simpler with quick off-the-shelf advantages. However, forward integration in a complex distribution context is more difficult and present different governance challenges that need to be resolved.

Chapter 4 (study 3). Using the theoretical guidance from the first two conceptual papers (chapters 2 and 3) this paper is a qualitative inductive single case study of a major forward integrated manufacturing firm displaying relatively mediocre industry performance over an extended time period. The distribution environment is perceived as becoming increasingly complex, where the empirical firm boundary literature using moral hazard and incentives as the theoretical frame cautions against forward integration.

This empirical paper discovers that the Case Company's initial economic rationale to integrate the independent distribution activities is traceable to the profit optimizing volume misalignment between the manufacturing and distribution under segregated ownership. By integrating forward, the manufacturing headquarters expect to gain several advantages by avoiding double marginalization, increasing the control with downstream activities, and limiting the costs related to moral hazard in the integrated distribution. These arguments all have their roots in a world with limited (human) bounded rationality, where a market-push driven organization can cement the advantages of the upstream center of gravity by extending innovative engineering and manufacturing quality with scale economies as the profit drivers (e.g., Anderson and Schmitlein, 1984; Bain, 1968; Brickley et al., 2015; Kalnins and Lafontaine, 2013; Pindyck and Rubinfeldt, 2013; Williamson, 1975).

However, as the conflict between different boundary theories illustrates, there can be other costs related to resolving the volume misalignment. This is highlighted by the governance challenges observed in the Case Company. Using property rights to maintain authority with the manufacturing headquarters and effectively drive an optimal production volume, the downstream incentives to distribution engaging entrepreneurial idiosyncratic resources and capabilities are diluted, and value creation from downstream activities is hampered. This seemingly leads to other integration costs. When manufacturing scale economies remain important, but upstream resources and capabilities no longer are sufficient to create profits, the dynamic capabilities of a forward integrated manufacturing firm is inhibited (Teece et al., 1997; Nooteboom, 2004). This hampers the ability to transform its value offering to the market for end-users. Hence, the governance regime that the Case Company has embarked on, and is 'stuck with', resembles what is required in a directional distribution context and shows a difficulty accommodating the requirements of the increasingly complex market conditions.

Chapter 5 (study 4). The last empirical case study contrasts the governance approaches adopted by two forward integrated manufacturing firms operating in the same industry, but displaying very different performance over an extended period of time. Again, the setting is perceived as reflecting a complex distribution context, where the extant firm boundary literature cautions against forward integration. Yet, both manufacturing companies have pursued a forward integration strategy. Since Company A (the Case Company in chapter 4) is commented above the present summary will focus more on Company B.

Company B when integrating forward recognized the pending incentive misalignment issues. The incentive misalignment that B experienced was however different compared to Company A. Company B earlier established a more global reach due to a smaller home market, and therefore used downstream private entrepreneurs to cater to the specific local and attempted to design a flexible manufacturing process accordingly. Disputes over the distributors' investments and the premiums they required to engage idiosyncratic resources and capabilities was the initial reason for Company B's decision to integrate forward. Hence, Company B's priority was to maintain the pull from the end-user markets and maintain a strong local presence, engaging downstream resources and capabilities.

To maintain the end-user driven focus from the distribution, several governance instruments were implemented. First, by prioritizing manufacturing flexibility, Company B was less dependent on distribution to satisfy the need to keep the 'assembly line' running at optimal levels, as was the case in Company A. Second, by delegating autonomy to distribution operating as a 'true' profit center, the consequences from prioritization of own activities was internalized. This effectively balanced the firm's center of gravity, keeping a close proximity to final users in the market with coordination of interdependency based on mutual adjustment. The performance of a 'balanced' distribution of power between manufacturing headquarters and distribution relies on the application of two governance instruments. First, profits are allocated to distribution to incentivize personal, often unobservable, and contractible future related activities and investments where multitasking is internalized and rewarded. Second, a strong set of company values provide guidance, together with key performance indicators, that also seek to monitor potential moral hazard issues. It is important to note that in Company B, the key performance indicators never take priority over long-term value creating goals. In short, Company B recognizes the (often) conflicting integration rationales that a complex distribution context presents and seeks to implement multidimensional governance instruments to capture the best practices of each.

Finally, Company B was, and still is, considered a very manufacturing driven firm. However, it has managed to offset the rationales derived from boundary theory that argue for segregated ownership, capturing the value from improved coordination of idiosyncratic resources and capabilities along the integrated value chain.

1.2 Synthesizing Insights

The studies (papers) comprised in this thesis have sought to provide answers related to the strategic decisions of manufacturing firms to integrate forward into distribution, and assess the different challenges this presents. Forward integration remains fundamentally different from backward integration, and depending on the distribution context, presents very different governance challenges. These differences must be acknowledged when executive decision-makers contemplate forward integration and consider the governance regimes subsequently installed to manage it.

These differences mainly relate to:

1. Incentive misalignment takes different shapes and remains an important factor in determining forward integration. The incentive misalignment of long-linked sequential interdependencies implicates different profit optimizing quantities – more costly to the upstream supplier in forward integration to the upstream manufacturer.
2. Forward integration creates new exposures to the end-users in the final product markets, and establishes a new final point of revenue and profit consolidation. This has implications for the delegation of responsibility, authority, and how controls and incentives are used to shape competitiveness in the final product markets.
3. Forward integration creates exposures to new product markets requirements and use of idiosyncratic resources and capabilities to deal with them, which can also be the source of moral hazard. The perceived plasticity and profit potential of idiosyncratic resources and capabilities affect their use and governance.

Manufacturing firms that contemplate forward integration therefore need to consider the distribution context and weigh the short- and long-term implications of conflicting boundary theories before they decide to integrate forward and impose governance mechanisms. The adopted governance instruments must provide a fit between the distribution context and the adopted governance approach. Basing integration on one rationale, like the avoidance of double marginalization without considering idiosyncratic resources in the distribution, can lead to loss of competitiveness by disabling important value adding resources. Furthermore, solving one problem with forward integration can develop internal dynamics that are very difficult to change, if that becomes necessary. Contrary to the empirical observations and recommendations

of boundary theory, this study also shows that the governance of forward integration can create lasting competitive advantages when the governance instruments are properly adapted to the given distribution context.

1.3 Implications for Theory

One of the inspirations for this thesis is the observed performance differences between forward integrated manufacturing firms and the different theoretical recommendations provided by the extant literature on the decision to integrate forward. One stream of research argues for forward integration when markets make it costly to monitor the distributors' (marginal) effort (e.g., Anderson and Schmittlein, 1984; Anderson, 1985; Brickley and Dark, 1987; John and Weitz, 1988; Kalnins and Lafontaine, 2013). Another research stream argues that incentives for the use of idiosyncratic resources and specific knowledge are superior under segregated ownership, i.e., no forward integration (e.g., Baker and Hubbard, 2004; Brickley and Dark, 1987; Lafontaine and Slade, 2007; Norton, 1988; Silverman and Ingram, 2017; Woodruff, 2004). If theories provide these different recommendations, then how should firms navigate and act to reconcile the two streams of literature?

Holmström and Milgrom (1994) also address the conundrum of different boundary theories that provide conflicting integration rationales. They argue that several different incentive instruments interact and influence the actions taken by agents in an integrated firm. Their basic argument is that the marginal benefit provided by (three) specific incentive instruments (Table 1) must move in sync when the adverse effect of an exogenous factor is incurred. Such factors could be markets providing costly monitoring of agents' effort or investments in 'non selling activities' in an adjacent firm as argued by Anderson and Schmittlein (1984). Integrated ownership offers weak incentives to control employee activities in the firm, hereby maintaining the asset value. In other words integrated ownership prevents adverse selection from segregated ownership of assets. Asset ownership also provides more powerful incentives possibly leading to incentives related to opportunism and bargaining to extract quasi-rents from asset specificity. Lastly, monitoring of effort and compensation provides incentives, but often with unintentional effects that can be mitigated by job design. These incentive instruments also represent important boundary theory contributions.

Theory of the Firm	Incentive Instruments	Main Authors
Firm control over employee actions and activities.	Weak incentives from integrated ownership give the firm control over employee activities to maintain asset value.	(Simon, 1951; Coase, 1937; Williamson, 1975)
Residual claims to own assets.	Asset ownership provides broader and more powerful incentives. The owner is residual claimant to the use of own assets and the direct returns from their use. It removes opportunistic bargaining between adjacent firms.	(Grossman and Hart, 1978; Hart and Moore, 1990; Klein, Crawford and Alchian, 1978; Williamson, 1979, 1985)
Monitoring of effort and compensation. Incentives are often costly and imprecise allowing only a limited set of variables to be rewarded	Authority to design employment contracts and incentives. Excluding tasks from job contracts limits the employees' action portfolio and job freedom. Excluding an activity is setting the incentive at zero.	(Alchian and Demsetz, 1972; Holmström, 1982; Holmström and Milgrom, 1991; Fama, 1980)

Table 1. Theory of the Firm and the Importance of Co-varying Incentive Instruments

Adopting the perspective of Holmström and Milgrom (1994), Company A (in the comparative case study) attempts to maintain control, offering weak (direct) incentives and using the authority of upstream manufacturing to monitor and hereby prioritize effort of the downstream distribution. Yet, the case studies show that the performance of Company A is less than optimal, and is inferior to that of Company B, which seems to violate the incentive instruments highlighted by Holmström and Milgrom. Company B has sought to limit the authority of the manufacturing headquarters, creating stronger incentives to engage its own assets without imposing forceful monitoring of actions. The structure of equally powered profit centers at manufacturing and distribution is an instrument to balance the center of gravity when idiosyncratic resources along the entire value chain create value. Therefore, we need to consider the firm as more than a black box without structures and opposing agendas, but instead need to

be sensitive to the distribution of resources and capabilities identifying who are the claimants to economic performance.

If the integrated resources are interdependent from co-specialized use and the bundling of these resources represents incremental profits then integration, i.e., common asset ownership, is preferred (Barney, 1986, 1991; Connor and Prahalad, 1991, Teece, 1986). Property right theory (Grossman and Hart, 1986; Hart and Moore, 1990) bases the decision to integrate on distorted incentives where the property right holder is the residual claimant to non-contractible investments. While property rights theory usually considers costs related to distorted incentives between two legal entities, this can also apply to internal entities like sequential profit centers. A more recent extended perspective also advocates integrating the importance of stakeholders in the resource-based view (Barney, 2018; Alvarez et al., 2020). Here, residual claimants are not only considered to be the shareholders but also stakeholders engaged in the generation of firm profits, e.g., by bundling valuable co-specialized resources, and where their remuneration is contingent on the firm's ability to generate revenue. While this is not part of the study it is noteworthy that in all 20 annual reports analyzed of Company B, it explicitly mentions value creation for all stakeholders in its mission statement. In contrast, Company A in 2002 mentions it once in relation to environmental responsibility only to disappear in 2003 and 2004. From 2005 until 2015, it appears again in the detailed description of Company A's mission statement and corporate responsibility. In the years 2016 and 2017, it only appeared in relation to capital management. In 2018 and 2019, it did not appear at all.

The case study of Company B illustrates how the integrating manufacturing headquarters has ensured that non-contractible resources (its own effort) held by private stakeholders in distribution are safeguarded by credible commitments from the governance instruments. This secures both short and long-term investments, where budgets and transfer pricing (Holmström and Tirole, 1991) are tools to appropriate value and exert control over downstream entities.

Lastly, the studies also illustrate that the decision to integrate and subsequently govern cannot be based solely on economic arguments. In particular, integration into complex distribution (exemplified by Company A and Company B) shows the effects from organizational elements like culture and political implications (Van Maanen, 2008) must not be ignored and needs consideration. The classic advice for forward integrated manufacturing firms to increase business and customer focus has been to separate the service function into an independent profit

center (Bustinza et al., 2015; Gebauer et al., 2005; Oliva and Kallenberg, 2003), However, Gebauer et al., (2010) find that the cultural element of service orientation from managerial behavior has s significant impact on corporate values and employees service orientation. The key aspect to improve overall performance in service orientated manufacturing firms lies not in organizational structures distributing economic responsibility, but in the same structures that serve to separate the managerial behavior of the upstream manufacturing from the downstream services to increase service orientation and corporate culture.

The cultural impact on service orientation of Gebauer et al., (2010) is however partly at odds with Oliva et al., (2012). While Oliva et al., (2012) support the positive profit impact from separating manufactured products and services into independent profit centers, they find a significant negative effect in relation to non-financial performance like customer satisfaction and collaboration. In short, when forward integrated firms separate manufactured products and services into independent profit centers, this leads to increased earnings but no increase in customer satisfaction. One perspective for explaining this could be that while the separation creates two organizations, both interfacing end-users, it also created organizational interdependency that can create transaction costs like opportunism (Williamson, 1985) internally (Gibbons, 2010; Grossman and Hart, 1986; Rosen, 1991). A volume driven manufacturing unit might sell the tangible product and simultaneously create an installment base, and thereby a future service and profit potential for the service business unit. On the grounds of this installment base, the service organization can act opportunistically to maximize its own profits at the expense of long term customer orientation. This could be visible in the service organizations' reduced investment in customer relationships or free-riding on the likelihood of future sale of manufactured products. All factors contribution to a reduced cultural service orientation.

This study provides contributions to the growing servitization literature in the areas of structures, culture but most importantly by considering the governance instruments and how possible conflicting integration rationales influence integrated firms' performance. In the described cases of Company A and B governance instruments can be a contributing as well as a discriminating factor to performance in both financial and non-financial areas.

1.4 Implications for Practitioners

The finding from the studies in this thesis also has implications for practitioners that pursue a strategy of forward integration where three questions are relevant to ask, or consider.

1. What are the implications of forward integration in an increasingly complex market environment when the decision to integrate is based on industrial economics rationales, like avoiding double marginalization, to gain a price advantage?
2. How can the integrated firm avoid diluting the value potential of idiosyncratic plastic resources and capabilities that reside within the integrated distribution?
3. If the initial governance approaches turn out to be ineffective, can the implications be unfrozen (Lewin, 1952) and be adjusted and changed for the better? (For example, Company A has attempted to change the current ways for more than a decade, but without success)

In this context Michael Beer (2001) provides an excellent case of U.K. supermarket retailer ASDA Stores Limited that found itself in a similar situation as Company A, with declining performance rooted in headquarters dominance and lack of ownership to engage activities at the actual point of meeting the customer. The ASDA case illustrates that a turnaround with engagement of downstream entrepreneurial resources and capabilities is possible, but there are important differences to be noted. ASDA is a supermarket retailer and therefore does not have the same long-linked interdependency to a manufacturing (supply) base. A manufacturing firm operates a long-linked technology where manufacturing depends on the performance of the distribution (Thompson, 1967). In the ASDA case, the headquarters could make credible threats of closing non-performing integrated distributors. This threat of closure is much more difficult with a long-linked manufacturing firm where large upstream capital investments in R&D, manufacturing plants, and dependent scale economy will be impacted from volume misalignment from closure.

Alternatively, one might ask – why not just divest the distribution? Here it is important to remember that both directional and complex distribution involves mutual asset specificity between manufacturing and distribution (Klein et al., 1978; Williamson, 1979) where the incentive for a 3rd party to acquire the specialized distribution assets is the potential sharing of quasi-rents they generate. So, to realize this value potential, an acquirer should be able to

effectively integrate the distribution. Conversely, the incentive misalignment from sequential monopolies where the manufacture carries the cost of volume misalignment may simply not make a divesture viable.

1.5 Limitations

This thesis builds on two conceptual papers (chapter 2 and 3), and two empirical papers based on two single embedded case studies. The purpose of this thesis is not to advocate one governance type over another, but point to the importance of aligning distribution context with integration rationales and governance. Although these two cases point to important differences and scholars advocate the importance that can be extracted from case studies (Gioia, 2012; Welch et al., 2011; Yin, 2018), the question remains as to what extent the findings can be generalized. The thesis has used multiple information sources to ensure rigor in the triangulation of data (Yin, 2018), although the collected data remain confined to one industrial setting. However, the findings are consistent with other empirical studies of forward integration (Brickley and Dark, 1987; Woodruff, 2004) that observe the increased importance of entrepreneurial engagement of idiosyncratic knowledge and capabilities.

1.6 Future Research

One great advantage of conducting case studies lies in the uncovering of contextual insights that is not readily visible to quantitative studies. In the current study, an example of this is the way Company A's headquarters use transfer pricing to effectively minimize distributional moral hazard but also to create a 'pseudo' profit center, and in this way, disregard important resources, competences, and the need for incentives. The creation of internal profit centers also has other implications which should require further inquiry. Opportunism is usually connected to market transactions but with the creation of profit centers this can also take place internally. The way the costs are derived from integration of markets also seems a promising avenue to understand integrated firms' governance and competitiveness.

There are however, also limitations to case studies. The correlation between how costs from different organizational and market transactions affects integration rationales interaction, and

how this further shapes the governance instruments that are used, needs further understanding. Broadening studies into multiple industries and distribution contexts – using the uncovered governance instruments as proxies and using grading or scoring questionnaires to assess these – can provide additional and much needed insight into governance of forward integrated manufacturing firms. Substituting contracts with hierarchies also means that we should ask if segregation into different profit centers has occurred, and if they actually function as true profit centers. In this way, qualitative and quantitative research could complement each other and lead to new insight.

With the continued trend of manufacturing firms' forward integration into the growing servitized industries this seems a promising research avenue for considering governance. This growing body of literature often jumps directly into topics like, business models, organizational transformation and structures and herby implicitly basing forward integration on the profit potential without considering the often conflicting economic boundary rationales that often seems the root cause of integration costs. By integrating firm boundary literature and in particular the emerging 'resource and stakeholder perspective' this could advance the discussion relating to idiosyncratic resources, capabilities and incentives. This study shows that these factors are rudimentary to consider when a manufacturing firm integrates forward.

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