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M&A as a means for Industrial Firms to servitize their business

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1 Introduction

In today's world, a great number of companies end up working in industries that reached market saturation and/or market maturity.

Market saturation is reached when the volume of a product, or service, in a defined industry has been maximized.

At this stage, a company needs to find new solutions to keep expanding their customer base, and thus, to remain profitable, or to continue to have margins by offering new/additional value propositions to its installed customer base.

Market maturity is reached when the industry arrives at a state of equilibrium and have a slowing rate of growth.

Just as a product, even a market has a lifecycle, which evolves among four different stages: Introductory stage, Growth stage, Maturity stage, and lastly, Decline stage. Companies at this level tend to be larger, older, and more stable.

In these markets, it is fundamental for firms to drive strategic growth of their products, otherwise they would end up going out of business.

One way that organizations have to overcome these issues is applying servitization. By definition, *servitization is the transformational process whereby a company shifts from a product-centric to a service-centric business model and logic* (Kowalkowski, C., Gebauer, H., Kamp, B. and Parry, B. (2017)). Moreover, servitization concerns the process through which a company develops the capacity to provide services and solutions that add-on its traditional product offer (Baines, T., Lightfoot, H., Peppard, J., Johnson, M., Tiwari, A., Shehab, E. and Swink, M. (2009)).

Many drivers have encouraged the adding of services into the offering of firms, such as increased competitiveness, market power and sales performance (Kowalkowski et al., 2017). Indeed, services have higher margins than products and provide a more stable source of revenue as they are more resistant to fluctuations in the economic cycle. In terms of marketing benefits, a service orientation can help to sell more products.

Moreover, a service-based strategy is thought to provide an attractive possibility due to the more intangible and difficult to copy nature of services (Salonen, A. (2011)).

For this reason, companies shift their view of the offering from “*goods or services*”, through “*goods and services*”, to the bundle of “*goods + services + support + knowledge + self-service*” (Kowalkowski et al., 2017).

According to the study of Kamp, there is a shift from a product-dominant logic towards a service-dominant logic. Whereas under the product-dominant scheme, goods are considered the focal point of the exchange relationship between buyer and supplier, in a service-dominant culture, services are the foundation of the buyer-supplier relationship (Kamp, B. (2019)).

One issue that comes from this shift is that firms not always have the knowledge and capabilities to develop profitable service solutions to attach to their products (Valtakosky, A. (2017)).

Nevertheless, the current literature on make-or-buy mainly focuses on the organic development of the companies. Moreover, there is also quite a bit of attention for creation of services through inter-organizational networks, such as joint ventures or other strategic alliances.

However, there is a suitable alternative to the internal growth which has been neglected: external, or inorganic, growth through merger and acquisition (hereinafter M&A) (Oberle, L., (2020)).

A merger or an acquisition is the combination of two or more firms, which results in one new organization and serves as measure for corporate expansion and advancement (Roberts, A., Wallace, W. and Moles, P. (2003)). More specifically, a merger is the bringing together of two approximatively equal companies (in terms of size), which combine their resources and businesses into one single entity; if management control and ownership are taken over by one of the two companies, it is an acquisition.

Williamson in his studies acknowledge the possibility of M&A implementation, which was actually previously ignored due to misunderstanding of the market. It was believed that markets were always places of perfect competition, where transactions could happen much more efficiently than inside firms. Although it is true that when markets are competitive, they work well to resolve disputes, his research proved that, when market competition is limited, the dynamics inside firms handle conflict resolution much better than markets. Furthermore, he proved that many economic decisions that mainstream theory said would be handled more

efficiently in the marketplace were actually handled much more efficiently within firms (*Williamson, O. (1981)*).

For this reason, it is more than useful to look at what happens inside the companies, instead of just concentrating on what is happening on the market.

M&As are often described as a mode to quickly, yet costly, reach new competencies and resources, and have also been described to revolutionize a firm's operations. Then, why are M&As so rare in the servitization literature?

Öberg identifies two main reasons (*Öberg, C. (2020)*):

1. There is a strong interlinkage between servitization and such contemporary modes of developing businesses as communities, ecosystems, and platforms.
2. M&As are described as a later step of development as it requires heavier investments and is linked to decreased uncertainties about what to invest in. Here, the internal development seems the only viable solution to reposition operations.

Referring to the first point, it can be identified a trend of developing digital services (or *Digitization*), embedded in physical products. For example, in the music, taxi and hotel sectors new digital services such as Spotify, Uber and Airbnb have entered the market with disruptive business models, as downstream retailers, and have established competitive offerings by controlling consumer interaction, and making upstream resource owners as dependent suppliers. Hence, digitization facilitates the development of cost-efficient operations and is an enabler of service quality, through better resource allocation and more accurate information sharing inside and outside the boundaries of the firm (*Vendrell-Herrero, F., Bustinza, O., Parry, G. and Georgantzis, N, (2017)*).

Referring to the second point, the study of Eggert identifies two different types of services (*Eggert, A., Hogreve, J., Ulaga, W. and Muenkhoff, E. (2011)*):

1. Services supporting the product (SSPs), which support the installation and use of the supplier's core products and ensures their proper functioning. These are typically of low complexity, are purchased frequently, and are not essential to the industrial customer's primary functions. Examples are spare part delivery, hotline, equipment repair, inspections, and maintenance.
2. Services supporting the clients' actions (SSCs), which consist of services that support the client's actions in relation to the supplier's product. These services are typically

more complex, contain more credence properties, are highly customized, and more often require personal delivery. Examples are process optimization, research and development, business consultancy, and the operation of entire processes on the client's behalf.

Given this distinction, it is reasonable to think that companies will turn to a dangerous solution, such as a M&A, only if they want to deliver complex services (SSCs), but they do not have the means to develop the knowledge internally.

Moreover, M&As are mostly seen as strategies to retain downstream control in the value chain. Alliances and joint ventures are common coordinating mechanisms in the upstream end, allowing companies to minimize transaction costs and exploit potential localization advantages. The level of vertical integration increases at the downstream end: new investments, acquisitions, and stake-ins are the preferred strategic practices to acquire knowledge and operative capacity required for service delivery (*Huikkola, T., Rabertino, R., Kohtamäki, M. and Gebauer, H. (2020)*).

Hence, the attention given to the industrial sector is lower, as their activity is focused on B2B transactions rather than B2C.

2 Research question and hypothesis

The research question that will be tackled in this study is:

- *“Is M&A a profitable way for industrial firms to servitize their business?”*

The hypothesis that will guide this study and that I will try to verify is:

- *“Industrial companies develop their service offering by pursuing inorganic growth through M&As, and they are able to achieve better performance results with this strategy”*

The reason behind this hypothesis is due to the fact that the literature provides little consideration to the effectiveness of service M&As on industrial firms, since they are related to the upstream part of the value chain. However, there are cases of companies who seek to improve their product offering by adding services to their portfolio. Hence, it is valuable to analyse whether or not this strategy is useful for the company improvement.

The objective of the research is thus to expand the focus of the literature and provide useful information on whether and how industrial companies add services to their business activity. Moreover, I will try to examine if M&As turn out to be a valuable solution to tackle the competition coming from the market.

To do so, I will firstly analyse the literature about servitization and M&As, to understand which are the focus and practices and the correlations between the two, and to study the solutions provided.

Then, I will analyse some relevant case studies about companies that implement M&As in their strategy, to assess whether or not they establish new services thanks to them.

The context of this research will focus on the elevator industry, as the actors in this sector are very active in the context of mergers and acquisitions.

3 Servitization: Implementation and Risks of the strategy

According to Öberg, servitization refers to how manufacturing firms extend and remodel their offerings to focus on value in use rather than product transfer. Thus, servitization describes how a manufacturing firm redevelops its product offering to focus on the customer's use of products, and thereby adding services to better meet the needs of the clients (*Öberg et al., 2020*).

An example could be, Rolls Royce's "power-by-the-hour", which sells aircraft engine power usage rather than the engines themselves (i.e., they charge the client based on the usage instead of charging the cost of the product). Moreover, the sharing economy could be described as relying on the idea of non-ownership transfer and use of someone else's products.

3.1 Concepts of the strategy

However, servitization is just one of the notions identified in the service implementation strategies. In the literature about services, there are four different concepts related to possible strategies (*Kowalkowski et al., 2017*):

1. *Servitization*, which is the transformational processes whereby a company shifts from a product-centric to a service-centric business model and logic

2. *Service infusion*, which is the process whereby the relative importance of service offerings to a company or business unit increases, amplifying its service portfolio and augmenting its service business orientation
3. *Deservitization*, which is the transformational process whereby a company shifts from a service-centric to a product-centric business model and logic
4. *Service dilution*, which is the process whereby the relative importance of service offerings to a company decreases, reducing its service portfolio and augmenting its product business orientation

This study shows already that adding services to the product offering is not an easy task to pursue, and companies should be aware of the possibility that, if not correctly managed, servitization can lead to a regression in terms of service offering.

Adding on this, the study of Öberg shows that many large firms continuously pursue both service infusion and service dilution initiatives. These dynamics are not confined to service flows from one actor to another (upstream or downstream) but also depend on such factors as innovation, maturity, and competence. For industry incumbents in particular, this leadership and change management challenge lies in being sufficiently agile to withstand new competitors (Öberg, C. et al., 2020).

3.2 Service implementation

Focusing on servitization, it has been typically described as a process that follows a service continuum, which is composed of three stages, respectively (Bustinza, F., Lafuente, E., Rabetino, R. and Vaillant, Y. (2019)):

1. *Base*: the outcome lies in the effective provision of goods (e.g., products and spare parts, and warranty contracts); it constitutes a source of differentiation for manufacturing firms as they help to unveil customer needs
2. *Intermediate*: focus on product conditions; examples include maintenance contracts and agreements, repair services required to restore or maintain a product
3. *Advanced*: include output-based services and emphasize the provision of capability (e.g., value added services such as risk and reward sharing contracts and customer support agreements)

Whereas basic services tend to be more exploitative (product-related) in nature, advanced services (use and performance-oriented) have a more exploratory character (*Baines, T. and Lightfoot, H. (2013)*).

It is argued that basic services are core skills and resources that are required to participate in the market. They act as an entry barrier, but do not provide a sustainable source of competitive advantage. Thus, companies that want to differentiate themselves must provide advanced services that offer superior value through customization and proactive sensing of client expectations (*Salonen et al., (2011)*).

Going deeper in this analysis, the study done by Raddats and Easingwood identifies four different service strategies that companies can implement (*Raddats, C. and Easingwood, C. (2010)*):

1. *Product – Attached services on own products* (e.g., installation, training, and support)
2. *Product – Attached services on own and third party products* (e.g., installation, training and support)
3. *Operation Services on own products* (e.g., managed services, asset availability)
4. *Vendor – Agnostic Operation Services* (e.g., systems integration, technical consultancy)

As one can notice, the first two are service strategies oriented towards the products, while the latter two are service strategies oriented towards the customers. This recalls the study of Eggert, which makes a separation between SSP (services supporting the product) and SSC (services supporting the client actions) (*Eggert, A. et al., 2011*).

However, the level of service offering is not the only driver of service implementation. The work done by Lee, Yoo, and Kim identifies two components that drive the profitability of servitization as a competitive strategy:

- *Service dependency*, which is the degree of dependency of physical goods upon services.
- *Channel substitutability*, which is the degree of substitution between conventional channels and servitized one.

The study reveals that the servitization strategy is a better choice for a manufacturer selling physical goods only when the goods require a higher level of service (i.e., high service dependency), and when the competition between the “goods + services” and “servitized goods” is severe (i.e., high channel substitutability).

Under high channel substitutability for instance, managers should consider servitization to increase the firm's profit since customers can more switch to the newly offered servitized product (*Lee, S., Yoo, S. and Kim, D. (2015)*).

3.3 Risks of the Servitization strategy

One of the reasons that can hinder the correct implementation of a servitization strategy, is that companies have to face different changes compared to how they usually perform their business. Respectively, the literature identifies the following main changes (*Huikkola et al., 2020*):

- *Identity from product-focus to customer-centric*
- *Capabilities to integrate technology development with customer value understanding*
- *Power position in the manufacturing ecosystem from upstream to downstream*
- *Efficiency logic towards a service factor logic*

Here, it is presented that to effectively execute servitization strategies, manufacturers must move downstream closer to the end customers. In the case of industrial companies, we can still identify this concept, as providing services related to the products that they offer will reinforce the relation between the firm and its clients.

Coming back to changes that a company must pursue, manufacturing firms need to realign their strategies, processes, routines, culture, and internal organization (*Neu, W. A. and Brown, S. W. (2008)*). Moreover, servitization calls for new capabilities, such as capabilities in system integration, project management, IT systems, consulting, financial competences, delivery, and post-sales service.

Considering all these capabilities and knowledge that need to be developed by a company that wants to pursue a servitization strategy, we can imagine that this is not always profitable and brings many challenges that need to be addressed. Indeed, for services one success factor is the degree with which managers can utilize existing resources and capabilities to fit special conditions of the service business and its environment. Thus, rigidities may arise if the service development pushed these resources outside their initial environment (*Neu, W. A. and Brown, S. W. (2005)*).

This means that services related to the core products of the firm are significantly more beneficial, meanwhile unrelated services show almost no impact.

This implicates that spill over effects from existing products are needed so that the benefits of services overcome the additional costs for offering services.

As it was already mentioned, servitized business models can lead to negative outcomes if not correctly implemented. Bustinza in his study identifies three different reasons that can hinder the correct development of a servitization strategy (*Bustinza et al., 2019*):

- *Limited capabilities*
- *Inefficient organizational configuration to develop product-service innovation*
- *Poor make-or-buy decisions related to partner selection*

This last point on the list already shows that the literature acknowledges the fact that organic growth is not always the best option. Indeed, acquisition is proven to be a very useful solution when the company does not have the capabilities to implement servitized products. However, the risks and challenges that come with this strategic decision are plenty, as it will be shown later on.

Even if only looking at marketing aspects, there are, for example, multiple issues related to the post-servitization product and service offering: it could be sold separately or as a bundle, or they might have different pricing for the different services. These variables make the management of services very complicated, and it is reasonable that a manufacturer can be fairly unfamiliar with them (*Oberle, L. et al., 2020*).

As it will be explained later, this knowledge can be obtained through the acquisition of a service provider to avoid this issue, but the integration will cause new challenges.

Moreover, risks can be associated with “how customers may not be willing to pay for services”, and how the firm may not easily adjust to a service logic or develop competences to meet such new logic. Traditional manufacturers rather concentrate on the maintenance of the production and operations, paying less attention to customers. For the preservation of service operations however, customers as co-creators are a necessary component.

The study conducted by Valtakoski goes deeper in this customer analysis and explains the concepts of service failure and deservitization.

As the customer’s intentions and knowledge greatly affect the success of the solution, service failure may occur for few reasons (*Valtakoski et al., 2016*):

- First, the offered solution might not be what the customer needs, or it fails to create sufficient value for the client.
- Second, the solution provider might fail to give sufficient relevance to the importance of customer's knowledge for the value of the solution, resulting in failure in implementing the solution or creating the expected value.
- Lastly, customers may also refuse to adopt the solution offered by the manufacturer due to strategic reasons.

Furthermore, even if it may seem strange, sometimes it might be more advantageous for the firm to offer fewer services, which conversely means that the customer provides more of the required knowledge components. For example, this may be the case when the client has better knowledge of some components of the solution, when the solution is complex and presents a high risk to the manufacturer.

The result of the study shows that the overall knowledge of the customer and the solution provider are likely to change over time, for example through learning about the specific solution or through the development of improved versions of components. For this reason, deservitization can be seen as a special case of industry evolution, in which the service provider decides to reduce its service offering, and consequently its costs, as they do not meet anymore the needs of the clients (which developed the solutions or knowledge by their own) (*Valtakoski, A. (2016)*).

An example of this concept can be found in the case of Dürr, a leading German manufacturer of paint finishing systems. The company introduced one of the first pay-per-use services, enabling car manufacturers to pay for each car painted rather than investing in equipment and services. However, Dürr found it difficult to predict the level of equipment usage, or to calculate an appropriate pay-per-use fee. The service did not meet financial targets, and this eventually forced the company to sell its service division (*Kowalkowski, C. et al., 2017*).

To conclude, we saw that, in servitization, manufacturers should adopt a broader view of their industry and reconsider their position within the value system. This move requires firms to develop new capabilities and value propositions. Moreover, as the transition of each firm follows a unique and individual pattern due to differences in market positions, environmental conditions, or internal factors, the literature provides many success factors and recommendations for manufacturing firms. Hence, companies should analyse each case as separate from the previous one, as it is unique, and it will carry peculiar challenges with it.

Indeed, servitization is heterogeneous along the service continuum and across manufacturing industries (i.e., servitization is industry dependent).

4 Mergers and Acquisitions

As previously stated, a merger or an acquisition is the combination of two or more firms, which results in one new organization. (Roberts, A. *et al.*, 2003). More specifically, a merger is the bringing together of two approximately equal companies (in terms of size), which combine into one single entity; if management control and ownership are taken over by one of the two companies, it is an acquisition.

The way the business is conducted is as important, or potentially more, than the development of new products.

According to Statista, the number of M&A deals worldwide in just 2022 was 63,215, for a value of 5.9 trillion USD. To give further information, just in Europe the quantity of deals is 14,572, with a value of 691,7 billion USD (Statista, (2022)).

Moreover, these M&As are partitioned among the different industries as described in Fig. 1.

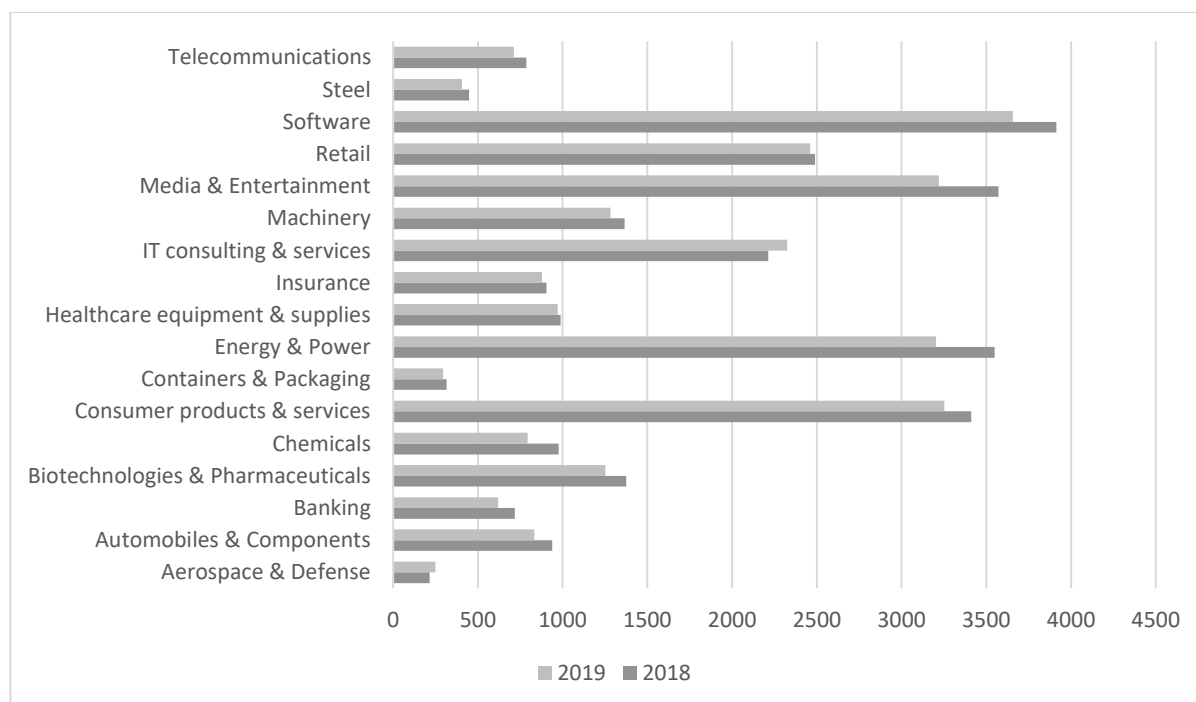


Figure 1. M&A deals in the different industries (Statista, (2018))

M&As are a common managerial strategy, whether used by firms to enter new markets, subdue a rival, or acquire valued resources such as technology, locations, or people.

M&A is often linked to a business or competitive strategy such as changing the basis of competition.

The literature provides different reasons for which a company would pursue a M&A strategy (*Calipha, R., Tarba, S. and Brock, D., (2010)*):

- to develop a new niche, enlarge the product line, or complement the products or service of the acquiring company.
- to increase market power.
- increasing market share.

An example of a company that follows a M&A plan could be the truck manufacturer MAN. The firm wanted to propose a fleet management service to its industrial clients (i.e., truck operators), which provided grounds for saving operating costs. To achieve the goal, MAN decided to collaborate with the leading fleet management company, Microlise (*Bustinza, O. et al., 2019*).

The complete M&A process can be divided into three stages (*Oberle, L. et al., 2020*):

1. *Pre-merger*: this is the planning phase of the acquisition, finalising how the M&A will take place.
2. *Merger*: this is the takeover phase, where the focus is on combining and integrating the companies.
3. *Post-merger*: this refers to the complete integration of the target company, and the objective is the fine-tuning of the M&A as it takes shape.

As it will be shown later, each of these phases has challenges that have to be addressed by the companies, in order to achieve a profitable M&A strategy that suits the already existing activity of the firm.

4.1 Trends in Merger and Acquisition

The trends in today's M&A practice are different, and they are respectively (*Öberg, C., (2020)*):

- *Horizontal acquisitions*, which takes place between companies that might be competitors; these are more common in industries that have fewer businesses offering

the same product, as there's an increased amount of competition. A successful merger or acquisition within this market has high potential gains.

- *Vertical acquisitions*, it's done to combine two companies that provide similar or common goods or services; the hope here is that the merger will create synergies. Essentially, this means that the two companies will be benefiting from the increase in assets and supply chain operations.
- *Diversification for creation of conglomerates*, which takes place between firms that have totally unrelated business activities.
- *Hostile acquisitions*, which refers to the acquisition of one company by another corporation, against the wishes of the former.
- *Mega-deals*, which is a large and costly transaction between two corporations, often involving a merger of the two or the acquisition of one by the other.
- *Global acquisitions relying on private equity and shareholder initiatives*.
- *Emerging-market acquisitions*, which refers to the continuous increase of emerging-market companies making acquisitions abroad to enter new markets.

As examples, we can see that all the actors in the value chain can be a possible target: distributors and dealers (e.g., Caterpillar and Volvo with their dealers), clients (e.g., GE Medical systems with its customers for training services), service providers (e.g., Philips with DHL and Laura Ashley with Federal Express for logistics services, or Volvo with Securitas for security services), and competitors (e.g., Matra with Renault for commercialization services) (Bustinza, O. et al., 2019).

4.2 Challenges in Mergers and Acquisitions

Present-day corporate strategy is focused firmly on M&As as a tool for promoting future growth and creating sustainable value. As a result, companies are aggressively seeking and buying compatible and synergistic businesses to bolster core strengths and shedding noncore operations.

Many companies, however, still fail to capture the much-anticipated added value from M&A deals (Calipha, R. et al., 2010).

This failure is attributable to the managerial challenges that each of the previously mentioned phases bring to the table. Even if M&A can be very profitable, the acquiring company needs

to take into consideration many factors, and also, it needs to control them in order to have a profitable result.

The components that will affect the success of the M&A process are (*Calipha et al., 2010*):

- *Strategic motives*: it is important that an M&A's motive is strategic, otherwise the acquisition will likely not be compatible with the corporate capabilities and goals.
- *Type and/or degree of diversification*: the type of the diversification that the acquisition intends to achieve (i.e., horizontal, vertical, concentric, or conglomerate) influences the relationship between the acquiring and acquired company.
- *Selection criteria*: criteria determined by the acquiring company's search team for selecting potential merger partners.
- *Strategic fit*: the degree to which the target firm augments or complements the parent's strategy, and thus, makes identifiable contributions to the financial and nonfinancial goals of the parent.
- *Culture*: cultural differences and integration efforts during the post-merger integration period are critical to performance.
- *Organizational structure*: the acquiring company has several decisions to make, including how to structure the resulting firm post-merger.
- *Ambiguity*: by the end of the due diligence process the managers of successful M&As aim to resolve any outstanding details, obtain answers to questions, and generally avoid any possible misunderstanding.

Adding on this study, Valtakoski argues that the relative knowledge bases of the target and the buyer, as well as the acquiring party's ability to absorb the capabilities and knowledge determine the outcome of this strategy (*Valtakoski, A. et al., 2016*).

Moreover, an argument commonly used to explain failures in M&A operations is that too much attention is paid to financial parameters and not enough to business and human organization, as well as operational parameters (*de la Guardia, J., Palacios, M. and Zurdo, R. (2021)*).

Thus, the factors affecting valuable M&As can be divided between the three stages of the M&A process.

4.3 Challenges in Pre-Merger Phase

The main problems identified in the pre-merger phase are information asymmetries and different experience levels between the two parties.

Regarding the first one, it refers to the fact that the seller can hide part of the information to avoid the risk of reduction of the offer prices by the buyer. During the negotiation phase, the problem already appears when the seller cannot, or does not, want to transmit certain information to the buyer, so the buyer does not have all the real information. This factor is even more severe when the M&A operations aim to penetrate international markets (*de la Guardia, J. et al., 2021*).

In order to overcome this issue, the acquirer company will perform a due diligence analysis. The due diligence is a research and analysis of a company or organization done in preparation for a business transaction, such as a corporate merger or acquisition (*Merriam Webster, 2022*). The due diligence process must resolve all doubts and questions during the pre-acquisition phase. Continuing with unresolved doubts and uncertainties can be critical during the integration phase. When different information appears in the integration or post-acquisition phase, companies face information asymmetry (*de la Guardia, J. et al., 2021*).

Referring to the experience issue, the study of Cuypers suggests that the differential acquisition experience of the target and the acquirer will play a crucial role in determining which one will receive how much of the value arising in the deal.

First, it is shown that parties involved in past negotiations learn strategies and skills that they can leverage in subsequent negotiations, especially with other parties that lack similar skills. Second, the impact of experience on the outcomes of strategic interactions is fundamental, as adaptive learning occurs and is carried over to subsequent interactions, allowing the negotiator with more experience to capture more value.

Hence, targets can better use information asymmetry to their advantage when they have an experience advantage, while acquirers with an experience advantage are in a better position to overcome this information asymmetry and capture a larger value from the transaction (*Cuypers, I., Cuypers, Y. and Martin, X. (2016)*).

Given the influence of the information asymmetry on the profitable implementation of a M&A strategy, and considering the importance of the due diligence phase and the difference

in the levels of experience of the parties involved, many companies decide to internally develop a department dedicated to the assessment and coordination of the M&As activity.

4.4 Challenges in Integration Phase

Going on with the analysis, the organizational integration, such as interaction and coordination between the two firms involved in the acquisition, is considered to be one of the most influential factors in achieving synergies.

Thus, it is very important to choose the right integration mode. According to the literature, the prevailing one are (Xing, Y., Liu, Y., Tarba S. and Cooper, S. (2017)):

- *Absorption*, which represents a high level of integration and involves dissolving the boundary between the acquiring and the acquired firm, and minimizing the autonomy of the acquired management.
- *Symbiosis*, which denotes a moderate level of integration, where the acquiring and the acquired firms co-exist and gradually become interdependent.
- *Preservation*, which is the lowest level of integration, and where the acquisition is managed at arm's length, providing the highest level of autonomy to the acquired management.

In this case it is very important to decide carefully which integration mode to pursue. As seen before, too much attention is paid to the financial parameters and not enough is given to the business and human organization (*de la Guardia et al., 2021*). Indeed, cultural differences are an affecting factor, and the acquiring company should put the focus on these.

4.5 Challenges in Post-Merger Phase

Lastly, the post-acquisition integration phase is widely recognized as a critical part of the M&A process, and a main source of value creation.

The integration and combination of resources can be achieved through company acquisitions and appropriate post-merger integration measures. Thereby, organizational learning is required to acknowledge and understand the other party's point of view, which is needed to merge the goods logic and the service logic (*Oberle, L. et al., 2020*).

The focus is upon two dimensions (*Angwin, D. and Meadows, M. (2015)*):

- *Strategic Interdependence*, which suggests how interdependent merging firms should be in terms of capability transfer and resource sharing. This determines whether value will be created through value capture (a one-time transaction-related event involving shifting value from previous shareholders/stakeholders to the acquiring firm's stakeholders), or value creation (a longer-term approach based upon managerial action and the transfer of capabilities between firms through resource sharing, functional skills transfer and general management capability). Such transfer creates value that would not exist if the firms operated separately. This requires integration of organizational structures, functional activities, systems, and cultures, to create a functioning whole.
- *Organizational Autonomy*, which is concerned with the extent to which an organization's culture is maintained or dissolved. It is important therefore to allow a level of autonomy in terms of target discretion over decision-making, particularly when new and unfamiliar resources are brought to the acquiring firm. Maintaining organizational autonomy minimizes acquired firm disruption and allows tolerance, as an acquired firm can continue with its own culture. All in all, the essential success factors when handling cultural differences and introducing changes are communication, change management, and awareness.

As stated before, by looking at all these different parts of M&As, and how difficult they are to be managed as a whole, what companies decide to do increasingly often is to develop a dedicated M&A function. An M&A function supports the M&A process by providing professional know-how. Since acquiring all the necessary information is costly and time-consuming, more and more companies that are active in M&A processes incorporate departments that are responsible for the valuation of the possible acquisition (*de la Guardia, J. et al., 2021*).

First, M&A experience has a positive impact on M&A performance. Second, M&A experience has a positive impact on the development of an M&A capability. Hence, it provides evidence that an M&A function has a positive impact on the development of an M&A capability. Moreover, this means that the performance of M&A, and thus the captured value, grows thanks to the installation of an M&A function (*Trichterborn, A., Knyphausen-Aufseß, D. and Schweizer, L. (2015)*).

Ensuring the long-term efficient and effective utilization of the resources and capabilities requires the proper alignment of strategy, management, and environment, which is a critical success factor of the service transition. Contingency theory underlines this argument, as it explains that the best way to run an organization is dependent, or contingent, on that particular situation. In other words, a specific management style can work well in one company and fail completely in another one (*Oberle, L. et al., 2020*).

5 Mergers & Acquisitions to servitize industrial companies

Taking again the study of Bustinza on the make or buy approach, we can see that both the type of service offering (base, intermediate, advanced), and the market conditions determine the strategic choices governing the servitization decision (internally produced (make) or outsourced (buy) service provision). Hence, servitized manufacturers must balance the trade-off between existing internal and required external service capabilities through participation in business ecosystems (*Bustinza, F. et al., 2019*).

However, the current state of literature on servitization and service growth mainly focuses on the organic development, and so far, research has taken little focus on the variant of mergers and acquisitions operations in a firm's servitization process (*Oberle, L. et al., 2020*).

Moreover, besides organic and internal growth of the required new capabilities and resources, external growth through acquisitions could be a suitable alternative, which might prove beneficial. Having to deal with a transition that includes changes to offerings, mindsets, and competences, a company may choose the path of acquisition to buy a service organization or firm specialized in customer engagement (*Öberg, C et al., 2020*).

Service companies differ from industrial manufacturers in their way of working, salary structures, and leadership structures.

In order to achieve a profitable service M&A, industrial firms need to build a professional service infrastructure by first developing the human resources, skills, and knowledge and second establishing a service network with new distribution channels and new contacts (*Olivia, R. and Kallenberg, R. (2003)*).

5.1 Servitization strategy implementation

Taking the acquirer perspective, there are three different typologies of servitization strategies (Xing, Y. et al., 2017):

- *Adding*: the strategy of adding servitization involves providing an opportunity for the acquiring manufacturing firm to obtain new service offerings and possible options; this strategy is likely to be associated with non-existing or low service level on the part of the acquiring firm, and a relatively advanced service offerings of the target firm.
- *Utilizing*: this strategy is more likely when the acquiring firm possesses service offerings that are not present in the target; the acquiring company can offer complementary services or expertise for the target to utilize.
- *Reconfiguring*: more sophisticated approach in dealing with servitization when both target and acquirer firms possess service offerings before the M&A; this strategy requires a high degree of coordination and collaboration between acquirer and target during the M&A process, to pursue value-creating servitization activities by the combined entity.

This information can be better understood by looking at Fig. 2:

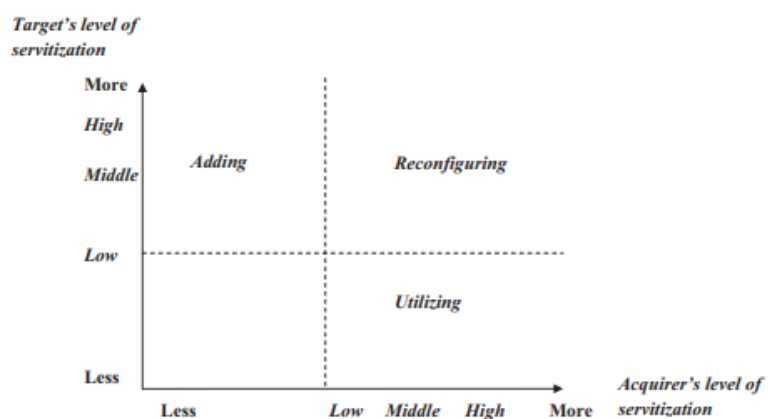


Figure 2. Typology of servitization strategies in M & As from the acquirer's perspective (Xing, Y. et al., 2017)

An example of these strategies can be found in the Chinese acquisitions of German manufacturing companies. Chinese companies are in an emerging market, and it serves manufacturing companies around the world with high- and low-tech products. Their objective is to expand to new markets and to acquire new technological capacities to get a greater share of the value created (Adding strategy). Conversely, the German companies can benefit from

the new organizational structure and resources offered by the Chinese companies (Utilizing strategy).

According to Oberle, given the companies particular objectives and current conditions, like the servitization maturity level, the servitization approach through M&A can either follow the reconfiguring or the adding strategy (*Oberle, L. et al., 2020*).

5.2 Servitization and Post-Merger Integration

Concerning the key focus points of the integration measures, traditional manufacturers rather concentrate on the maintenance of the production and operations, paying less attention to customers. For the preservation of service operations however, customers as co-creators are a necessary component.

The acquiring firm has to pay attention to this fact when a service provider is integrated by a manufacturing firm. Indeed, the already established customer base should be maintained, and thus, it has to be attended and served during the integration.

New services for the manufacturer's products could be developed, but sales have to promote and market the services at the same time as they are selling the physical goods. Existing customers of the industrial products could be informed about the new service offer in order to closely link the products and the services (*Oberle, L. et al., 2020*).

This implies that, to combine servitization challenges and post-merger integration peculiarities, planning becomes even more important:

- Management of resources are required for the management of both the servitization process as well as the post-merger integration (strategic, tactic, and cultural commitment is needed).
- Culture remains a crucial success factor, since losing key people with unique capabilities and knowledge is a general problem in M&As; especially in this case, manufacturing firms have a different mindset than service providers. In servitization, it is thus important to incorporate a service logic.

Hence, as already mentioned, the service transition requires the development of service capabilities in a manufacturing firm.

In this specific scenario, the post-merger integration and the service transition are interrelated, and the management of both is decisive for success (*Oberle, L. et al., 2020*):

- First, in service delivery and operations, the customer's co-producing role leads to a higher degree of interaction as compared to the product sale.
- Second, customer groups, customer focus, and customer-centricity ought to be considered. Thereby, the potential conflict between customer focus and corporate goals has to be managed and balanced. This second aspect clarifies that manufacturing firm need to acknowledge the high customer relevance in service companies.
- Third, the business model should be addressed, and the challenges faced in this area are closely linked to the integration degree. The integration degree is thus driven by the relatedness of the business model and the services. The integration degree largely impacts the integration success as more changes often make way for more problematic topics.

Furthermore, in the case of a service M&A, functional and industrial culture matters more than in the merger of two companies of the same industry. The awareness about the prevalence of different mind-sets is an important success factor in order to avoid cultural clashes.

This access to knowledge, from which the acquirer wants to benefit, is a main motive for company acquisitions in the servitization process, and post-merger fluctuations lead to losses in the firm's value.

Coming back to the study of Xing on integration modes, these can significantly affect the configuration of servitization strategy in M&As (*Xing, Y. et al., 2017*):

- Integration activities offer a platform for employees of both the acquirer and the target firm to gain a better understanding of the current situation and to communicate results in a timely manner.
- Integration activities can facilitate knowledge transfer between target and acquirer in cross-border M&As.

Moreover, there is the important effect of absorptive capacity as a foundation of service capabilities:

- The lack of a proper level of absorptive capacity can hinder the identification and implementation of different levels of services on the part of both acquirer and target;

furthermore, this will lead to a less successful implementation of servitization strategies.

- An adequate level of absorptive capacity is required for both target and acquirer to generate synergistic effects.

Hence, crucial success factors are thereby the absorptive capacity and the integration mode choice.

To conclude this section, we saw that, through the use of M&A, companies can add more sophisticated services to the portfolio, that allows a higher degree of after-sales services.

Moreover, acquisitions allow manufacturing firms to leapfrog competition going to more advanced stages of service excellence, without having to move through lower levels of the servitization continuum themselves.

Service offerings may be extended, further developed, and even optimized through the target's innovative power.

Lastly, M&A in servitization is mainly part of incremental rather than radical changes, thus M&A can serve to strengthen the existing offering in selective areas.

6 Elevator Industry

The global elevator and escalator industry is valued at USD 79.70 billion in 2021 and is projected to grow from USD 83.86 billion in 2022 to USD 132.8 billion by 2029. The market is divided between elevators, escalators, and related inter-floor transporters (e.g., moving walkways installed and used in commercial infrastructures, residential buildings, and industrial setups for transportation).

The increasing infrastructure spending by developing economies is expected to result in the growth of the market. Indeed, the infrastructure growth such as highways, schools, ports, and airports drive the increase of the industry activity. Moreover, the development of smart cities is also another factor that can lead to market growth. For example, China's smart city investment was around USD 30.4 billion in 2018 and is expected to reach more than USD 59.9 billion by 2023.

Another key insight from the industry is that the escalators segment is expected to be the fastest growing segment of the market. This is attributed to the high demand from commercial infrastructures, such as shopping malls or commercial parks.

However, the increasing concerns about elevators and escalators accidents are expected to impact the market. For this reason, many companies put the focus on safety and security measures, while also increasing the product quality.

Indeed, maintenance and modernization of existing equipment are expected to showcase significant growth over time. Furthermore, manufacturers are focusing on providing value-added services. For example, KONE in 2017 introduced its elevator maintenance offering with customizable 24/7 connected services, through an IoT platform.

6.1 Key Companies on the Market

The key players in the market are adopting the strategy of acquiring small regional players to strengthen their service offerings and develop their domestic presence. Furthermore, advancement in technologies, and persistent research, achieve result in the development of innovative products and services. This development reflects in intensified competition across the regions.

The key companies in the industry are:

- KONE Corporation
- Schindler Holding Ltd.
- Otis Worldwide Corp.
- ThyssenKrupp AG

According to Bloomberg, these firms split the market share of the sector as shown in Fig. 3.

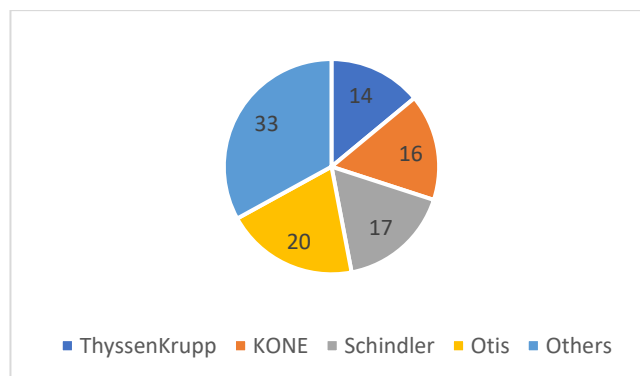


Figure 3. Market share in elevator industry (Bloomberg, 2019)

However, there are other players in the market which contribute to the competition of the field. For this reason, this study will include also the ones that are considered influential for the outcome of the sector.

These companies are:

- Orona Group
- Hitachi Ltd.
- Fujitec Co. Ltd.
- Hyundai Elevator Co. Ltd.
- Mitsubishi Electric Corporation
- Toshiba Corporation

Before starting the analysis of these firms, I will go through a description of these businesses activities to give a general idea of what is the focus of each company, and how they pursue their goals.

6.2 Companies' summary and description

In this section I will go through each company to give a representation of what the market looks like.

More specifically, I will collect the information retrieved from the companies' annual reports to analyse the differences in the products offering, the services offering, and the geographical areas in which the firms operate.

The objective is to create a showcase of the selected players that can be easily analysed and confronted.

The data has been collected in the following table:

	Product offering	Service offering	Geographical area
KONE	Elevators Escalators Automatic Doors Dispatching	Preventive Maintenance Connected Services Modernization People Flow Solutions	Europe Middle East Africa Asia-Pacific Americas

Otis Worldwide Corp.	Elevators Escalators Moving Walks Dispatching	Preventive Maintenance Connected Services Modernization People Flow Solutions	Europe Middle East Africa Asia-Pacific Americas
Schindler Holding Ltd.	Elevators Escalators Moving Walks Moving Goods Dispatching	Maintenance Connected Services Modernization People Flow Solutions	Europe Middle East Africa Asia-Pacific Americas
ThyssenKrupp AG	Elevators Escalators Moving Walks Home solutions Dispatching	Maintenance Connected Services Modernization People Flow Solutions	Europe Asia-Pacific Americas
Orona Group	Elevators Escalators Moving Walks Lift & Cabin Platform	Maintenance Modernization	England, Ireland Spain, Portugal Netherlands, Belgium France, Luxemburg Poland, Norway Brazil
Hitachi Ltd.	Elevators Escalators Moving Walks	Preventive Maintenance Connected Services People Flow Solutions	Europe Asia-Pacific Americas
Fujitec Co Ltd.	Elevators Escalators Moving Walks	Maintenance Modernization	Europe Middle East Asia-Pacific Americas
Hyundai Elevator Co. Ltd.	Elevators Escalators Moving Walks Parking Systems	Preventive Maintenance Modernization Connected Services	Europe Middle East Africa Asia-Pacific Americas
Mitsubishi Electric Corporation	Elevator Escalators Moving Walks	Preventive Maintenance Modernization	Europe Asia-Pacific North America
Toshiba Corporation	Elevator Escalator	Preventive Maintenance Modernization	Europe Middle East Africa Asia-Pacific Americas

Table 1. Elevator Industry Showcase

As we can notice, the product offering, and the geographical covering are similar between the different companies. There are some exceptions between more advanced companies such as KONE, Otis, and ThyssenKrupp and smaller players such as Orona or Fujitec.

Moreover, companies like Mitsubishi and Toshiba have actually a broader coverage of products that go beyond the mobility systems. For example, while they still identify their products as “Building Solutions”, in the same category Mitsubishi offers also hand dryers, and Toshiba provides lighting equipment. As it will be explained later, this represents a limitation when they disclose their data about “Building Solutions” in their annual report.

Regarding the services offering, we can notice how they differ between the different actors, according to their capabilities and knowledge in providing more differentiated and sophisticated services. One clarification that needs to be done is that, when a company presents “Preventive Maintenance”, this includes also the more basic maintenance.

Therefore, the analysis of the M&A track record and the subsequent analysis of the companies’ result is necessary to understand whether or not M&As are used to develop the services.

7 Methodology

In order to give a valuable investigation of the research hypothesis, the first task that I pursued was creating a track record of the major players M&As activity. To do so, I relied on different databases, in order to have the largest scope possible when conducting the analysis. The databases consulted were Crunchbase, Mergr, Bloomberg, and MarketLine. With these four, I was able to create a track record of the companies M&A activity, understand whether or not the M&As were related to servitization projects, and to crosscheck the data of the different databases.

Since most of the companies started their business long time ago, the timeline that I decided to screenshot goes from 2010 to 2020. These ten years timespan is probably the most valuable to analyse, as the companies were more active than before in pursuing acquisitions.

However, even if the M&A history is very broad for each company, the M&As on which I put the focus are just the ones related to servitization, and more specifically related to just the elevator sector. Indeed, some companies might acquire a steel business to improve its production system, but this would not be meaningful for the scope of my study.

For this reason, some companies will not show any M&A activity, as they did not pursue service acquisitions.

After the M&A track record, it is important to analyse the companies' financial results in this period. The data in this case was taken almost completely from the annual reports published by each business.

The first data analysed is the sales revenues, to assess the different size of each company compared to the others. By doing this, it should be reflected the market share of the businesses, and it should be possible to identify the size of each firm.

Secondly, I will analyse the ratio between operating income and sales revenues, to compare the efficiency of the different businesses during this time. Indeed, this value should tell us which companies are more influential and make the most out of their activity.

Lastly, two graphs are reported: the ratio between R&D expenses and total sales, and the ratio between service sales and total sales.

From the first graph, it is possible to analyse how much of their share each company allocate to their internal innovation growth. This should tell if a company is more prone to develop solutions inside the business or not.

From the second graph, it is possible to understand how much each company collects from their services activities compared to the overall business. This gives an idea of the efficiency of the companies' ability to exploit their service portfolio.

Indeed, by comparing these two graphs with the M&A track record of each company, it should be possible to identify patterns or methods used when it comes to business growth.

Finally, I analyse the results from each part to try to understand whether or not industrial companies produce internally their services rather than turning to the market to pursue inorganic growth.

8 Data analysis

In this section, I will go through the different data collected from each company to give a quantitative analysis of the M&As in the elevator market.

8.1 M&A track record

The first graph shows the track record of M&A activities pursued by each company in this 10 years timespan.

To be more specific, this graph includes only the M&As that are related to services acquisitions in the elevator sector.

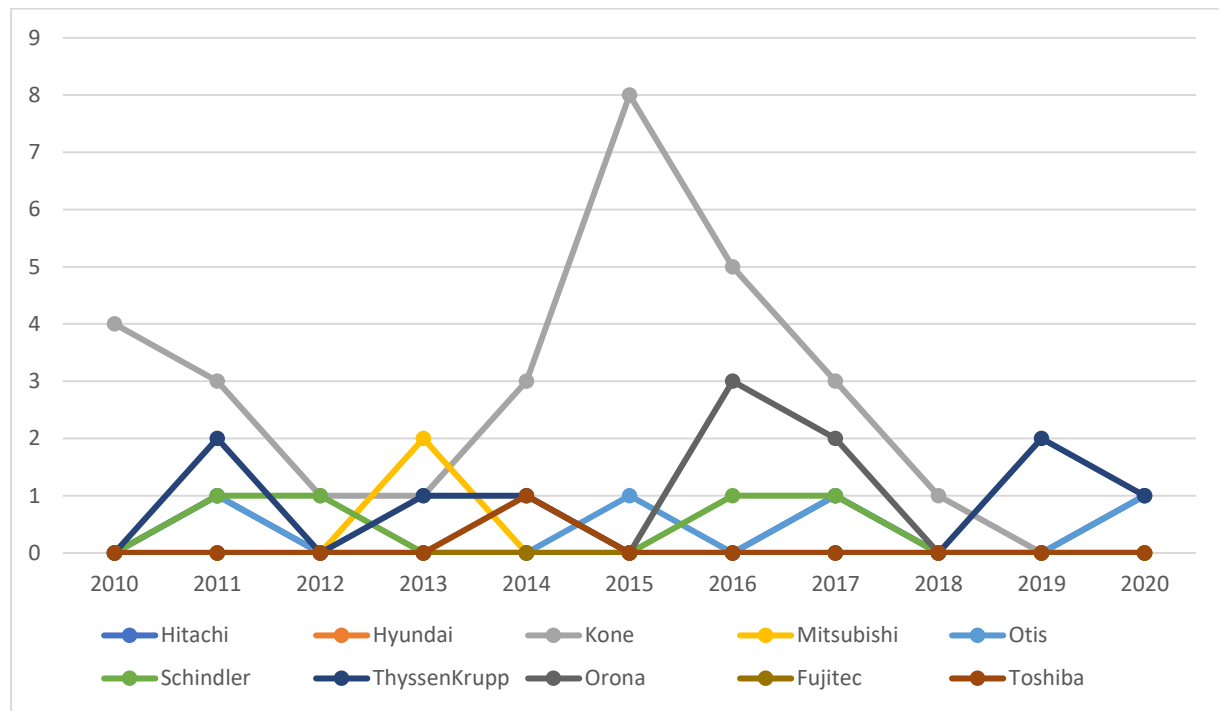


Figure 4. M&A track record of elevator market key players

As one can notice, KONE is the most active company in M&As. In these 10 years, the firm totally pursued 29 acquisitions. Many of these acquisitions are related to elevator companies that provides maintenance, repairs, and modernization services.

Here the scope and objective of KONE is probably to expand in foreign countries, while enhancing the service activity of the company. Indeed, these would be considered as simple services meant to support the products offering.

However, KONE also pursued acquisitions that provide more complex services. In fact, the acquisition of Shan On Engineering Company and Advanced Elevator Technologies, respectively in 2017 and 2015, most probably enhanced the development of the software for 24/7 maintenance of elevators and connected services.

Hence, in this case we can identify all three types of servitization strategies (Xing, Y. *et al.*, 2017):

- *Adding*: KONE was able to implement complex services thanks to the knowledge and abilities of the companies acquired.
- *Reconfiguring*: many acquisitions involved companies which already offered maintenance and modernization services; for this reason, it is fair to assume that the companies started to coordinate their service offering to better serve the clients.

- *Utilizing*: in the case of acquisitions involving more local actors, and intended to expand the company activities, the acquired companies could benefit from the more developed service offerings of KONE.

ThyssenKrupp follows in second place with 7 acquisitions during the timespan.

Even in this case, the majority of acquisitions were intended to expand the company market share while still adding maintenance services.

However, the acquisition of Lift & Engineering Services Ltd. in 2014 most probably positively impacted the company ability to provide more complex services, such as maintenance tracking and real-time diagnostic on elevators. In this case, we can identify at least two servitization strategies (*Xing, Y. et al., 2017*):

- *Adding*: ThyssenKrupp enabled more complex services thanks to the acquisition of Lift & Engineering Services Ltd.
- *Reconfiguring*: the company acquired elevator competitors to expand their business, but still, they could coordinate the service offering of both actors.

Orona is the third company for number of M&As. During these 10 years, the company acquired 5 businesses.

In this case, it is clearer the intent to expand the firm's boundaries, as the acquisitions were made just in Norway and France (respectively 3 and 2).

The company acquired elevator businesses which still offered products services. However, these services concern just maintenance and modernization, so they do not aim at developing more complex service offerings.

Here, the main focus was to enlarge the company's scope so, in my opinion, it can be identified just one servitization strategy (*Xing, Y. et al., 2017*):

- *Reconfiguring*: Orona acquired companies which already offered basic services, so they could coordinate to improve the overall service offering.

Next, there are Otis and Schindler, which both had 4 acquisitions during the timespan.

Even if these two companies are the leading ones for market share (respectively 20% and 17%), their M&A activity is fairly low compared to the others.

Even here, the companies mainly aim at expanding their markets more than adding complex services to their offering. However, it is possible to identify all three servitization strategies (Xing, Y. et al., 2017):

- *Adding*: thanks to the acquisition of Marshall Elevator Services in 2011, Otis was able to develop its eService, which allows manufacturers to access the elevators from wherever they want. In the same way, the acquisition of Hensler Aufzuge by Schindler in 2011 helped the company to gain the necessary expertise to create its service digital platform Schindler Ahead.
- *Reconfiguring*: both companies engaged in M&As that involved businesses that already offered maintenance and modernization services, with which both Otis and Schindler could coordinate the activities.
- *Utilizing*: in the case of Otis, an acquisition such as Bay State Elevator, in 2020, is a good example. The company already had basic services offerings, but after the acquisition they could count also on more elaborated services from Otis, such as the eService. The same goes for Schindler, as all the companies acquired after the platform implementation could benefit from this service.

Hitachi completed 3 acquisitions in these 10 years.

In this case, the company made acquisitions both for enlarging its boundaries, and for improving its complex service activities. To be more specific, in this case we can identify two servitization strategies (Xing, Y. et al., 2017):

- *Reconfiguring*: Hitachi acquired in 2020 the data analysis software firm of FusioTech Holding. Thanks to their knowledge, the company could coordinate the newly acquired expertise to better improve its already existing digital platform Lumada.
- *Utilizing*: all the companies acquired by Hitachi after 2015, year in which they launched their digital platform, can benefit from its software to provide high-quality and complex services.

Lastly, there are Mitsubishi, Toshiba, Hyundai, and Fujitec. These companies conducted almost no M&A activities in the chosen period. Indeed, they had respectively 2,1,0,0 acquisitions in the timespan.

Mitsubishi did two acquisitions in 2013 and Toshiba did one in 2014. All of them had the objective of strengthening the activity in foreign country; the companies already offered maintenance service solutions, so the servitization strategy focused on Reconfiguring. However, we need to remind that the study focuses just on the service implementation, so it restricts the companies in a tight way. If there were considered any business area for the M&A activities, these companies would have reported way different results.

According to the findings of the M&A track record, we can already notice how companies that turn to the market to acquire capabilities and expertise are able to provide more sophisticated services, rather than companies who just produce everything internally. Considering the first part of the hypothesis, for which industrial companies pursue inorganic growth in order to develop their services, it seems verified. Even though the service acquired are only the more complex one, these represent the services that create differentiation and higher competitive advantage. For this reason, the sophisticated services are, in my opinion, the one on which it should be put the focus.

Moreover, we can see that the hypothesis of Oberle, for which the servitization approach through M&A activities can either follow adding or reconfiguring activities (*Oberle, L. et al., 2020*), is rejected. Indeed, even if more sporadic, we can see some cases of Utilizing strategies implemented by the companies.

Now, I will proceed studying the data collected in the annual reports of the companies, to try to identify patterns or peculiarities regarding their results and the M&A activities that they conducted.

8.2 Annual reports data analysis

Unfortunately, Mitsubishi and Toshiba did not divide their revenues according to the only elevator sector. For this reason, only a set of the previously mentioned companies will be analysed.

8.2.1 Sales Revenues

The first index on which I will put the focus on is the Sales Revenues. By looking at this value the objective is to assess the size of each company compared to the others, and to give an idea of how the market share is divided between each actor.

The data was collected from the different Annual Reports of each company, thus the currency was not always the same. For this reason, I converted each value to millions of euros (M€).

However, it is important to mention that the value for the conversion was taken according to the present-day value of the currency for all the years considered. This limits the accuracy of the data, but it still remains valuable to make a comparison between the different actors.

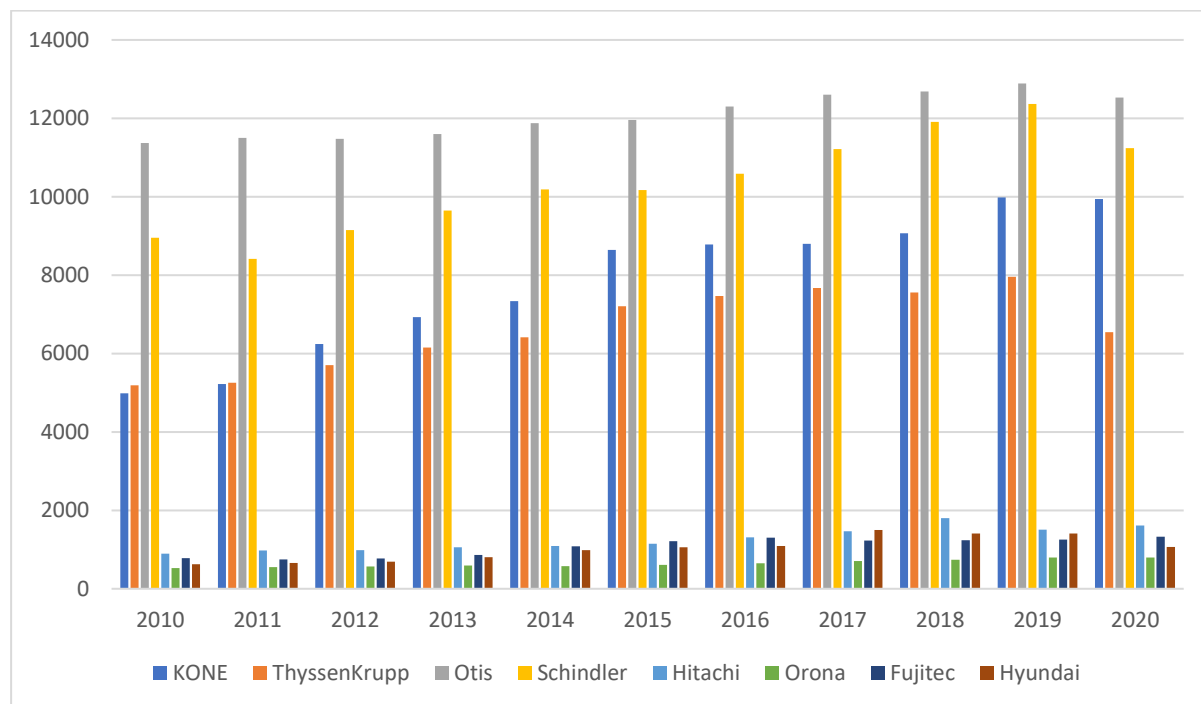


Figure 4. Sales revenues (M €)

As expected, Otis is the leading company for Sales Revenues in the elevator market, with sales always above the threshold of 10.000 M €.

It is followed by Schindler, which started from 8.000 M € and grew its business until it went above 10.000 M €.

KONE and ThyssenKrupp are close to each other from a Sales Revenues point of view.

However, we can notice how each year the gap between the two gets bigger, with KONE ending in the lead.

Hitachi, Orona, Fujitec, and Hyundai cannot compete in term of Sales Revenues with these incumbents. Indeed, their service revenue oscillates between 1.000 M € and 1.600 M € for Hitachi, 500 M € and 800 M € for Orona, 750 M € and 1331 M € for Fujitec, and lastly, 628 M € and 1500 M € for Hyundai.

With this analysis, we can see which companies are more influential on the market in terms of sales. Indeed, this graph reflects the data market share disclosed by Bloomberg.

However, more interesting information can be found by looking at the different ratios for each company, as each value will be balanced according to the relative dimension of the companies.

8.2.2 Operating Income Ratio

The second value considered is the ratio between the Operating Income and the Sales Revenues.

Since it is a ratio, the comparison will not be biased by the different size of the companies, but it will just reflect the ability of each company to turn sales into revenues.

Moreover, overall sales include both product sales and service sales, thus this comparison will also include the share of service sales that each company manages to capture.

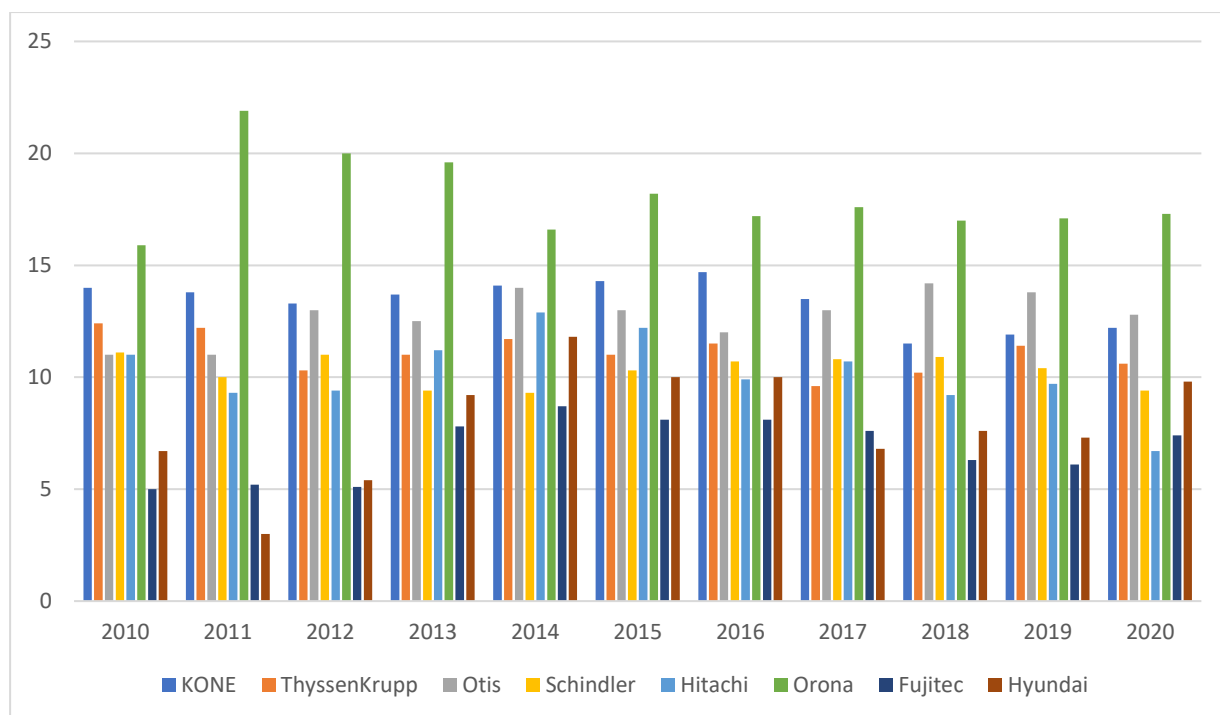


Figure 5. Operating Income Ratio (%)

Surprisingly, the highest ratio is achieved by Orona, with values that go from 16% to almost 22%. This result is probably due to the fact that, even if its revenues are very low compared to the other companies, its costs for the management of its operations are also way lower compared to the other businesses.

All the other companies are very close to each other in terms of efficiency. The values go from 6,7% (Hitachi, 2020) to 14,7% (KONE, 2016). The only exception is Fujitec for which the values are fairly low, and go from the lowest 5 % in 2010 to the highest 8,7 % in 2014. Also, Hyundai in 2011 registered the smallest value of all (3 %), but for the following years the income improved.

Regarding KONE, the lower income in 2018 could be related to the launch of its new service platform, which might have increased the managing costs of the activities. The same goes for Thyssenkrupp, which registered the lowest ratio in 2017, year in which the company launched its service platform.

Regarding the drop of Hitachi in 2020, this data could be related to the acquisition of a software firm occurred in the same year.

Finally, the low Operating Income of Fujitec is hard to explain, as the company did not pursue M&A that could have affected the costs nor had high R&D expenses that would have lowered the income. Most probably, this value is due to a lack of efficiency in managing the company operations.

The ability of each company to turn their sales into revenues does not differ enough to identify inefficiencies or competences that would need to be commented.

Moreover, there does not seem to exist a pattern of growth/regression in all the companies.

Each year is a separate case from the previous one.

Hence, there seem to be no proof that pursuing more service acquisitions increases the profitability of the companies.

8.2.3 R&D Ratio

The third graph will concern the ratio between the R&D expenditures and the sales revenue.

Thanks to this comparison, it should be possible to analyse the differences between companies that decide to pursue internal growth to develop new products/services, and companies that instead prefer allocating their income to and focus on external growth possibilities.

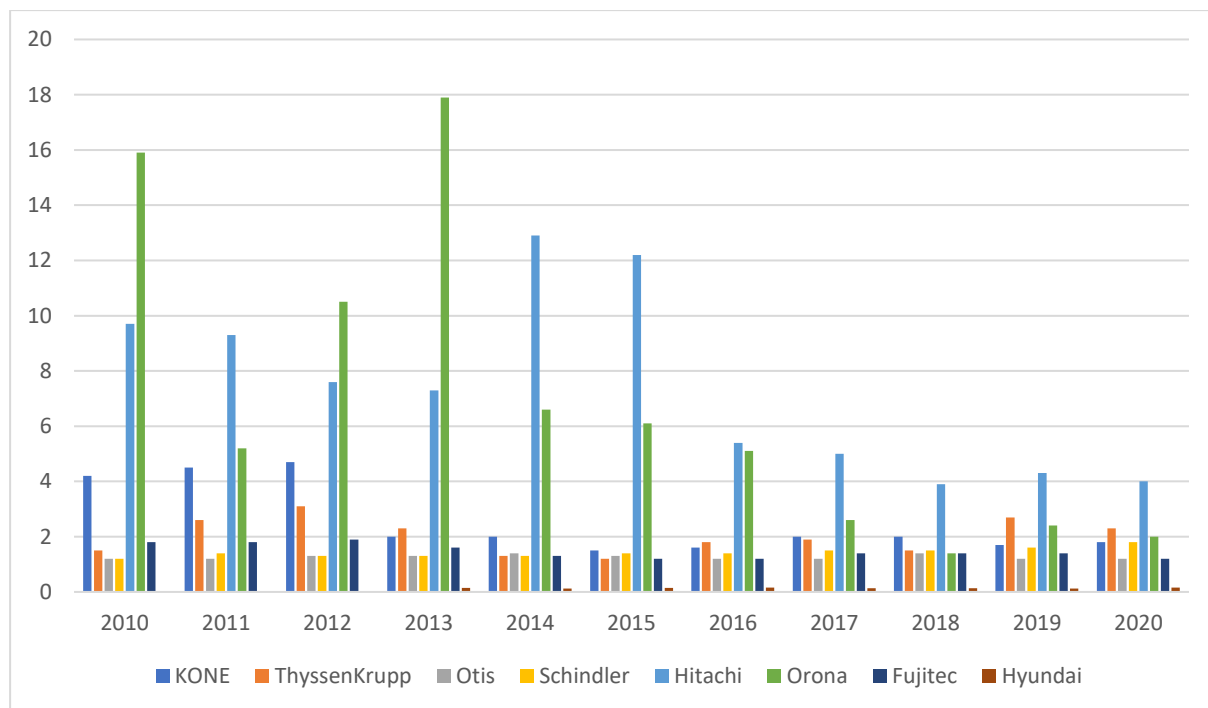


Figure 6. R&D expenditures ratio (%)

In this case, it is shown that, during the timespan, the fluctuation is more severe than in the other two graphs.

For this reason, each company will be analysed separately:

- *KONE*: it dedicates the highest share during the first three years considered, and then it standardized its expenses around 2% of the sales revenue; however, it is not easy to find a correlation for this decision, as the company pursued 8 acquisitions during these three years. Thus, it seems that the company started by tackling both internal and external growth. Since basic services can act as entry barriers, it is plausible that the company wanted to develop them in order to remain profitable and keep growing in the market (Salonen et al., 2011).
- *ThyssenKrupp*: in this case, the company did not allocate very different shares during the 10 years forecast. However, it is interesting to mention that the highest value was spent in 2012, when the company did not undertake any acquisition.
- *Otis, Schindler, and Fujitec*: these three companies did not change their R&D expenses during the timespan. This could mean that the companies found a good ratio of R&D expenses that allowed them to keep improving internally.
- *Hitachi*: it started with high shares dedicated to the R&D development, and then reduced them. However, this value was kept fairly high compared to the other companies. This could be due to the fact that Hitachi needed to develop new solutions to remain profitable.

- *Orona*: it has the highest R&D expenses compared to all the other companies. The highest share is relative to 2013 and it is equal to 17,9 % of the overall sales revenues. In this case, it is clearer the reason for such high expenses. Since basic services are core skills and resources that are required to participate in a market (*Salonen et al., 2011*), and since the company has in its service portfolio only basic services, it is necessary for Orona to allocate a big share of their sales to the development of these services.
- *Hyundai*: the company can probably be considered as a case on itself. The expenditures are very standardized, and they are around 0,14 %. The interesting thing about this is that the company offers both basic maintenance and modernization services, and more complex services such as remote maintenance based on IoT technology; moreover, it did not pursue any acquisition during the timespan. In my opinion, the only explanation is that the branch counts on the expertise and resources of the overall company, and thus this data does not provide useful information about whether or not services are developed internally or acquired from the market.

At this point, we can state that, since all the companies offer maintenance and repair services, and since these services are considered basic, it is better for the companies to internally produce them instead of acquiring from external businesses. Moreover, the scope of the companies is on the more advanced and complex services, as they provide differentiation opportunities. For this reason, it is understandable the standardization of the expenses for R&D allocated by the firms: they still need to grow internally, but there is no reason to dedicate too much money (and expertise) on basic services.

Finally, Orona and Fujitec are the only companies that do not offer advanced and more complex services. However, while Orona has high expenses to keep investing in internal growth, Fujitec do not invest a significant share for its development. This could be due to the fact that the company already reaches the financial goals prospected.

To conclude, previously we saw that both the type of service offering (base, intermediate, advanced), and the market conditions determine the strategic choices governing the servitization decision (internally produced (make) or outsourced (buy)). Hence, servitized manufacturers must balance the trade-off between existing internal and required external service capabilities in order to remain competitive on the market.

8.2.4 Service Sales Ratio

The last graph analysed regards the ratio between the Service Sales and the overall sales achieved by a company.

By studying this graph, it is possible to understand how much of the companies' revenue come from their service offering.

Unfortunately, not all companies disclosed the Service Sales value separately from the Products Sales. Indeed, Orona and Fujitec did not specify which share of sales comes from services, and Hitachi has this value just for three out of ten years (respectively 2018, 2019, 2020). Furthermore, the annual reports of Hyundai become very schematic when gradually going back by the years; thus, for some years it was not possible to find this information (more specifically, in 2010, 2011, and 2012).

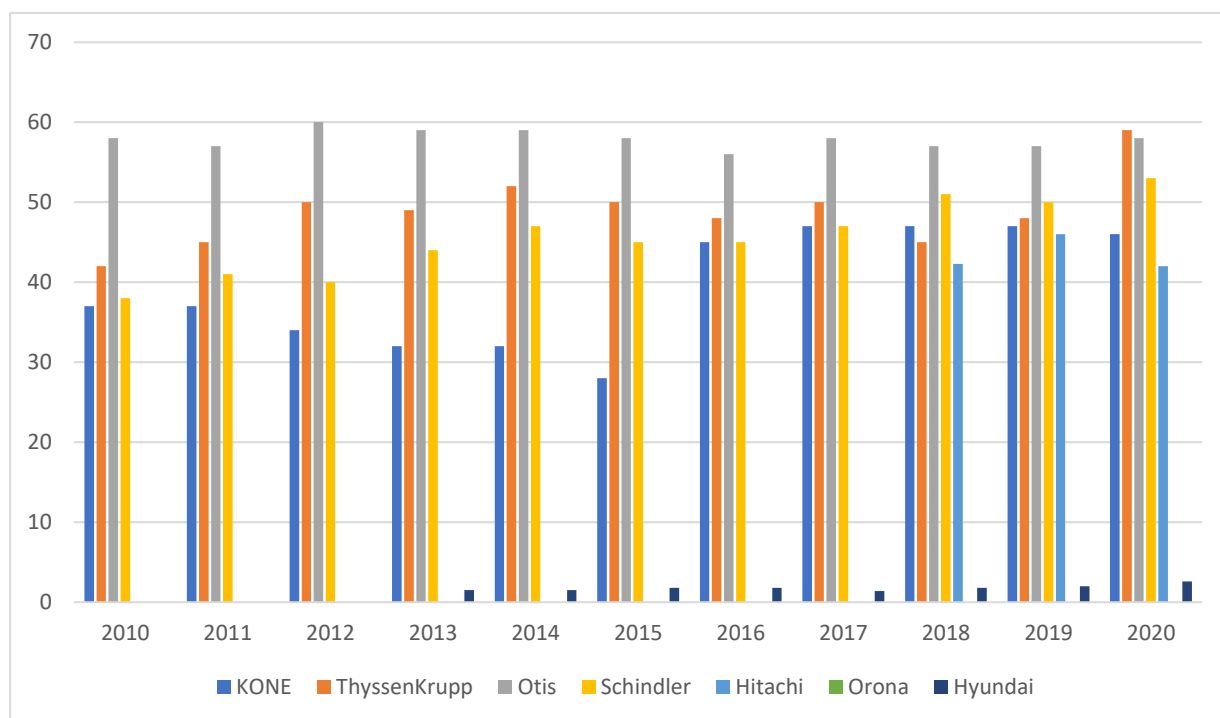


Figure 7. Service Sales ratio (%)

From this graph, there are several information that are compelling and valuable to analyse.

First of all, we can directly notice that Otis collects almost 60% of its sales revenues from its service offering. This data can be surprising, as the company is neither the most active in M&As nor the biggest spender in terms of R&D development. If we look at the R&D expenses, these would not provide a justification for the high results, as the shares allocated is

always standardized (around 1,3 %). Even by looking at the M&A activities, we would see a positive correlation between the acquisition in 2011 and the results of the following years, but we would not find this correlation for the later acquisitions.

For these reasons, this result can be reconducted to the higher ability of the company to exploit their services. For example, Otis was the first company to release its digital platform (2013) for advanced service offering. This could show a higher focus of the company towards the service offering.

Secondly, ThyssenKrupp is also making a fair share of sales thanks to its service offering. During the forecasted period, we can really notice that the ratio gets higher, until in 2020 it even surpasses Otis. However, here there does not seem to be a correlation between the M&As activity or R&D expenses, and the Service Sales collected. Indeed, if we look at the R&D costs of the company, we could assume the higher expenses made in 2011 (2,6 %) and 2019 (2,7 %) reflected in higher Service Sales. However, this correlation is not found for example is 2012, when the company had the highest investment in R&D (3,1 %). Moreover, if we look at the M&As of the company, we could find a positive correlation for the acquisitions made in 2011 and 2019, which increased the Service Sales of the following years, but this correlation is not found for the other acquisitions. For these reasons, the increase in the company Service Sales could be reconducted to the mix of R&D expenses and acquisitions, and subsequently, to the higher focus of the company in differentiating its revenues.

KONE is another interesting case to analyse. The company achieves fairly low Service Sales for the first six years, and then it suddenly increases them. Here, if we compare the R&D expenses with the Service Sales, we will see that they are not reflected in the results. Indeed, the company invested the higher shares during the first three years (around 4,5 %) and then reduced and standardized them (around 2 %). However, if we look at the M&A activities, we will notice that the company was more active between 2010 and 2015, than in the following years. Even if M&As take time before showing their effects, we can assume that the higher Service Sales achieved in 2016 are relative to the acquisitions done in the previous years. Indeed, it is fair to assume that the ability of the company to implement the newly acquired businesses grew over time. Moreover, KONE might have decided to reduce its R&D expenses and focus more on M&As to expand its service offering, as they reflected higher performance.

Regarding Schindler, the company surpasses the threshold of 40 % in 2013. Even in this case, if we take a look at the R&D expenses, we would not notice any difference or increase that could justify the higher performance of the following years. However, if we look at the M&A activity of the company, we can see that after the two acquisitions in 2011 and 2012, and also the two acquisitions in 2016 and 2017, Schindler always registered a higher Service Sales in the following years. Moreover, the company released in 2017 its service platform and from 2018 the Service Sales reached the highest value registered by Schindler. Even if the acquisitions should take time to show their effects, even here we can identify a positive correlation between the M&A activity and the Service Sales performance.

Even here, Hyundai shows results that are somewhat odd. Even though the company offers all kinds of services, the revenues that come from them is almost zero. This could be due to a low number of service sales, or due to a poor management of the service activity, which could also reflect in higher cost for the administration of the latter.

Lastly, one interesting fact is that after 2016, all the companies Service Sales (except for Hyundai) went above the threshold of 40 %. This could reflect a higher focus of the companies towards the service offering and differentiation, and/or a higher efficiency in providing the services.

Here we can identify the definition of servitization, according to which, when markets reach maturity or saturation, companies shift from a product-centric to a service-centric business model and logic. For this reason, the shares of Service Sales increased in order to keep the businesses profitable and keep creating higher margins.

However, it is again not possible to identify meaningful data that demonstrates that the higher number of acquisitions brings higher performance. Indeed, even though we can see this shift towards services, a company like KONE, that provides the biggest number of acquisitions, does not obtain a higher ratio of Service Sales.

9 Conclusions

Taking again the hypothesis, it is possible to state that it is true that industrial companies develop their service offering by pursuing M&As.

According to the information collected from the literature review, many drivers have encouraged the adding of services into the offering of firms, such as increased competitiveness, market power and sales performance (*Kowalkowski et al., 2017*). However, the companies do not always hold the capabilities to develop services by their own. For this reason, they can focus on inorganic growth to implement services attached to their products.

In order to achieve this goal, there are three different typologies of servitization strategies (*Xing et al., 2017*): Adding, Reconfiguring, and Utilizing.

By looking at the quantitative studies, we can see that, even if not all the companies pursue a M&A strategy while still having maintenance and modernization services, the firms that acquire expertise from the market are able to develop more advanced and complex services, such as digital platforms for integrating their service offering (Adding).

Moreover, even if the basic services are internally produced through R&D development, the companies that make acquisitions are more likely to improve their offering and to better coordinate their services throughout all their markets (Reconfiguring).

However, there are many challenges brought by the M&A strategy that can hinder its performance. Indeed, there were identified challenges in all three stages of the M&A implementation, such as information asymmetry (*de la Guardia, J. et al., 2021*), difference in the relative experience on M&As (*Cuyper et al., 2016*), coordination during the integration (*Xing et al., 2017*), and cultural differences (*Calipha et al., 2010*).

Thus, the companies should develop an internal department dedicated to the assessment of possible M&A opportunities, in order to achieve a better due diligence study and manage more efficiently every issue coming from the acquisitions. Moreover, according to the contingency theory (*Oberle, L. et al., 2020*), the company should study each case separately, since a specific management style can work well in one company and fail completely in another one.

Taking again the hypothesis, and focusing on the ability to achieve better performance results thanks to the acquisitions of external capabilities, there seem to be no evidence to support it. Indeed, by looking at the graph of the ratio between Sales Revenue and Operating Income, we can see that there is no correlation between the number of M&As pursued and the income. Indeed, even though Fujitec, that made no acquisitions during the timespan considered, has the lowest income, a company like KONE, which has the highest number of M&As, does not report the highest return. Indeed, Orona seem to be the one with the highest ratio between the whole group. This could be also related to the differences between the companies in the management of the operations, but still no proof was found to support the hypothesis.

To conclude, M&As seem to be a profitable mean for industrial companies to servitize their business. However, the companies should be careful when implementing this strategy because, even though it is valuable, it carries many challenges that then will have to be addressed and overcome.

9.1 Limitations and Future Research

Regarding the limitations of this research, in my opinion there can be identified three main ones.

First, the study focuses only on the elevator business, which, even though it provides useful data for the analysis, limits the scope of the research. However, adding more sectors in the study would have been more complicated to handle and it would be more difficult to understand the data collected for the analysis of the results.

Secondly, the companies analysed, even though they are all the ones for which it was possible to find an M&A track record and data about their performance, are just ten, which do not represent an extensive dataset that allows to demonstrate if the results are related to a correlation between the data, or if they are just a coincidence.

Lastly, there exist databases with subscription fees that would most probably provide better data for the analysis. For example, they could provide the amount spent by the companies for each acquisition, a data that I was not able to find as not disclosed.

To conclude, future research could focus on other industrial sectors to try to identify if the results obtained here are still applicable or not in a different market, or it could concentrate on different KPIs to evaluate if different correlations appear from the analysis.

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