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Merger and Acquisitions biases and the introduction of a data-driven environment to limit value destruction.

How Tableau’s suite products help in managing the decision process

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Abstract

Mergers and Acquisitions are among those operations able to launch a career of a manager or make it fall into the deepest chasm. Despite the mere meaning in the eyes of managers, the outcome in terms of value creation of these operations is tied to a lot of different endogenous and exogenous factors like country, the market where the firms are operating and more in general, by the performances of worldwide economic conditions. Going through the subject matter is then discussed the tender offer and, the other two most common ways the buyer negotiates with the seller, Negotiation one-to-one and auction. To increase the level of detail of the analysis is important to understand the fundamentals of behavioral theory and the concepts of financial and operating synergies meant to be drivers when dealing with M&A. However, those cited above are just theories, and the reality proves that different biases are added to the decision process that leads the Board to decide whether to close the deal or not. They usually have to do with attributes of acquiring firm, the CEO’s relationship with the target’s board and financial constraints due to the firm’s capital structure. The result is that 60% of recorded operations in the last decade destroy value. Business Intelligence comes as a solution to overcome these common biases thanks to the data sharing within the organization in a way that the data themselves tell a story and bring useful insights for the board in a new data-driven decision process.

1. Introduction

In this first chapter the attention will be pose on those data which help understanding trends and transaction values of the mergers and acquisition of the most recent year, leveraging the outbreak of COVID-19 to outline the relevance of economic uncertainty and other exogenous. Along with the data I want to highlight a relevant fact that should be seen as the source of the following discussion; on average, over the past years, the 60% of the total amount of takeover do not create shareholders value but, destroy it.

1.1 Historical data overview

Before starting to analyse the data and the current situation, I want to give an overview of the type of mergers that might occur. The word "merger" encompasses several types of transactions that are different from one each other in terms of target, acquirer relationship and, the method of payment used in the transactions. Being more on the point, there are two types of mechanism by which an ownership and control of a listed firm might change: the acquisition and the merger. The former means that either another corporation or a group of individuals acquire a target firm and this procedure do not encompass a subsequent creation of a new entity as result of the deal. The latter, instead, want to underlying the importance and the strategic role of creating a new firm which blend together the assets, competences and the financials of the two company together. In general terms both transactions fall under the caption of

takeovers. Stepping back to the differences in terms of relationship between the two firms and, the method of payment, we can put the attention on some critical aspects also needed to understand the analysis of chapter three. First, if the target and the bidder operate in the same industry, then the takeover should be considered horizontal, conversely, if the firms belong to different market takeover will be of vertical type. Concerning the method of payment, the main solution are typically two; paying the target with cash, that can be either internally retained by the bidder during the years or, rise through some credit channel like banks, or giving out stock in change of those of the target, triggering a swapping mechanism regulated by a previously agreed exchange rate based on the value of the share at the moment of the deal.

Now, we can set the ground up for the analysis by looking at the market with the higher transaction volume and, the data reported by Statista Research Department in Jul 25, 2022 in the article "Mergers and acquisitions worldwide - statistics & facts" state that: *"[…] The most attractive market for M&A deals remains the United States, but M&As involving Chinese companies have been increasing throughout the last two decades, overtaking the United Kingdom (UK) as the second largest market in terms of M&A transactions value."* As I'll discuss further in the next the country is a relevant aspect when dealing with cross-border M&A and represent a source of biases in the negotiations.

Aggregating the worldwide data covering from 2016 to 2021 we notice, as the graph shows, that there's a big step up in favour of the volume of the 2021 transactions. This might be rationally linked to the global economic contraction and the uncertainty caused by the coronavirus outbreak.

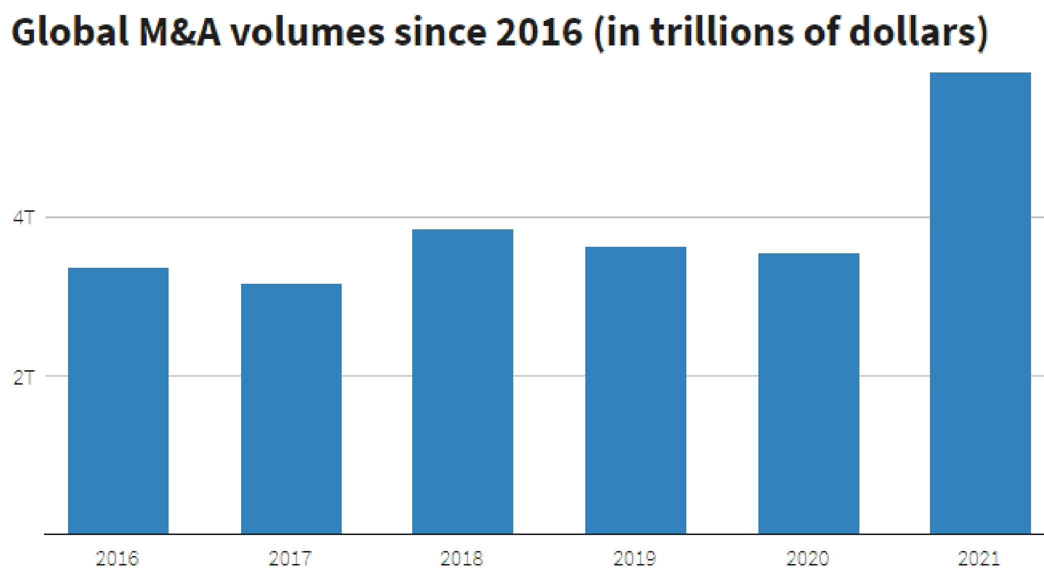

Figure 1

Indeed, the in 2021 the global transaction value nearly hit the 6 trillion dollars of evaluation, highlighting once more the bounce back of this activity to hedge the uncertainty in almost all the industry sectors.

To add specificity to this analysis is vital to outline that, despite the trend of the global transaction value per year, the industry itself might represent a source of intense transaction activity due to the degree of assets specificity. For instance, to understand the value of the transaction within the industry I refer to the article "Sector overview:

Strong M&A activity pervades nearly every sector" published on 31 Jan, 2022 by MIcheal Deyong and Gregory Pryor.

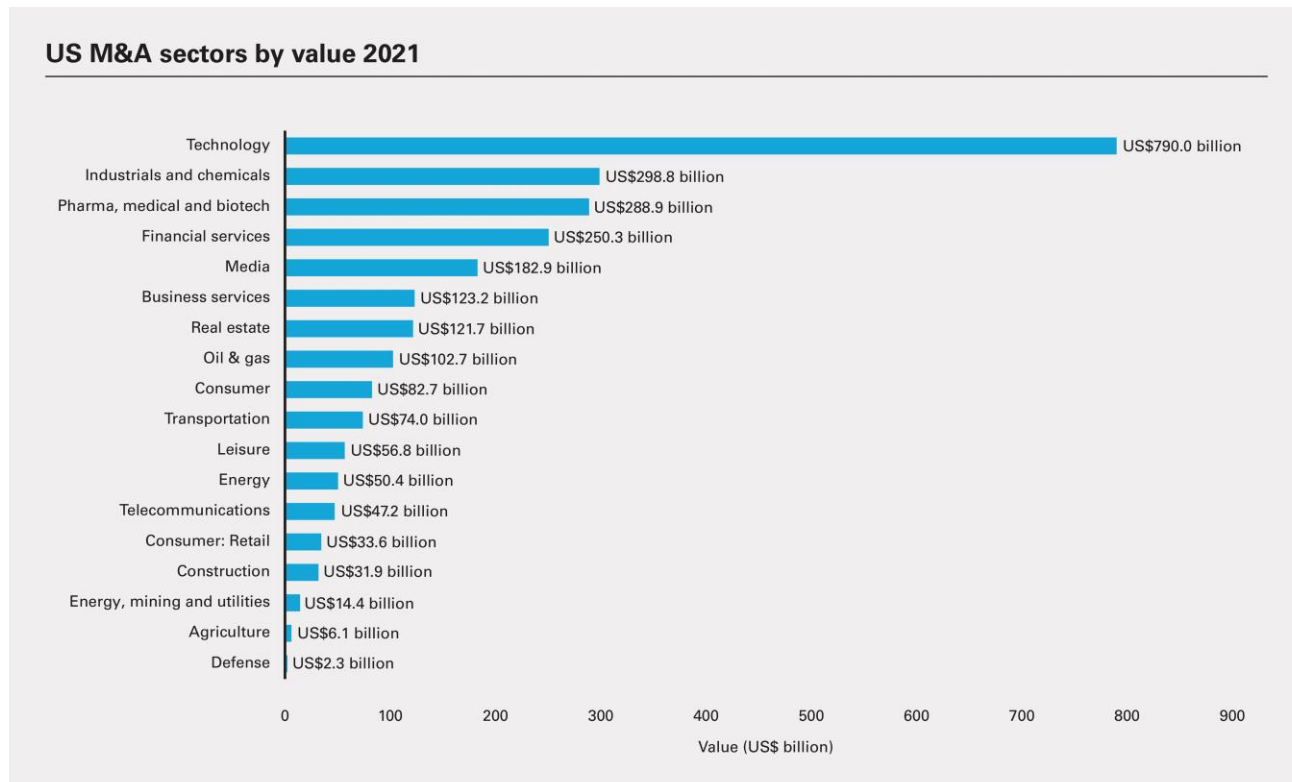

Figure 2

What is observable by watching this graph is a way significant volume of financial resources deployed to fuel the takeover activity in the technology sector. This tangible difference with the other sectors can be reconducted to the uncertainty stem by either speaking in terms on innovation technology and patent filling but, it can be also reconducted to the shortage of raw materials like lithium and nickel. The other relevant sectors like industrial and chemical, experience a relative growth in transaction value respect to the previous year by 111%. This number came by the acknowledgement of the relevant organizations in this sector to make their supply chain closer and less diffused in light of the pandemic related disruption, that leads to a strong takeover activity.

Eventually, we can assess the media industry trend which experience a 744% growth respect to the previous year mainly due to stay-at-home behaviour that characterize people all over the world during the pandemic.

Certainly, the past two years offered a great spot to understand how much the market for corporate control is affected by exogenous and endogenous factors, but, what make relevant the analysis is the combination of two crucial aspect; the first one is the value of the transaction, which is been discussed above and, the second is the value creation that flows into the pocket of the shareholder. To fulfil this goal, important findings are discussed by Alan Lewis and Dan McKone in the article "So Many M&A deal fails because companies overlook this simple strategy" published on May 16, 2016 which highlight an undisputable data related to takeovers; *"[…] more than 60% of them destroy shareholder value"*. At this point its clear that there's a hugr difficulty in converting the value involved in the transaction to who is directly interested by it, the shareholders. In the next chapters I discuss the possible reasons of why this misalignment occur so frequently and, lastly I'll introduce a possible solution by leveraging the introduction of a data-driven environment to help limit the value destruction.

2. General Principles by which strategic M&A occurs.

M&A are among the largest most readily observable form of corporate investment and, for this reason a conspicuous number of theories has already been studied and discussed on how and why this financial operation happen, or at least, should happen to trigger a value-creation mechanism for the shareholders. In this chapter we'll briefly discuss these theories and, the two typical synergies the manager looks at; the operational and the financial. Still, in relation with the introduction of biases in the negotiation process I shortly discuss the governance mechanisms to limit the shareholders' expropriation process.

2.1 M&A trigger mechanisms and theories

The first theory that represent a crucial driver in acquisitions has to do with the concept of value-creation. To effectively see and explain this way of looking the into M&A, we can synthetically summarize it in one almighty equation that state; the final value of the merged entity is equal the value of the target before the deal plus the value of the bidder before the deal and the synergies created thanks to the acquisition. The last term of the equation, represents the delta in terms of value, considering separately the bidder and the acquirer value before the deal. This delta is a concern of all stakeholders

and in the first instance of shareholders, which are expecting the EPS (earning per share) and P/E to increase after such an onerous operation.

The synergies themselves are of two types; the operational and the financial. The first one, as easily comprehensible by the name, is industry related and so encompass strategic actions that goes all together in the direction of reducing cost of production and, increase efficiency in the processes. Might be the case of which the efficient bidder wants to restructure a less efficient target and, the result can be exactly the one of reducing costs of production. This happens by looking for a target which its assets in place are able to lower the MES (minimum efficient scale) and then producing more at the lower cost, covering then the demand no more covered by the target. The discussion can be carry forward by also taking into consideration the economies of scope reason behind the creation of synergies since, it enables the merged entity to combine the production, marketing and distribution efforts and in some cases also the products to gain efficiency and attractiveness. Still, there's a case in with the acquisition and the synergies arise after a strategic decision of acquiring a target with higher chances of undertake positive NPV project with respect to the buyer. This because often happens that well established firm with a consolidated market share and customer base might be conservative in undertaking risky projects which entails relevant changes in the knowledge base and core competences of the firm itself. Beyond the reason by which a company might feel lock up to a well-established technology, the result is of a such relevance for the shareholders, since they see the market value of the

firm decrease because of frictions related to innovation and competencies that drag the possibility to undertake new project down and consequently the market react by lowering the value of the shares in accordance with the decrease of the present value of future CFs.

The next source of synergy is related to the financial sphere and, the new capital structure behind the diversified merged entity. These benefits come in different forms: liquidity enhancement, increase debt capacity and lower borrowing cost. Everything else equal, a larger and more diversified firm see its chances to face liquidation and bankruptcy decrease given the same degree of leverage with respect to a less diversified firm. The direct consequence of this is the increase in debt capacity, enjoying a more consistent tax advantages due to fact that the interest on debt are tax-deductible, without incurring in significant cost of financial distress. In a different way the liquidity enhancement is maximized in the case a public bidder takeover on a private target. This mechanism is justified by a usually highly concentrated stake of private stakeholders in the private firm which is a situation that tends to put them on high-risk exposure. The acquisition give them the possibility to cashing out their investment in the private target and, reinvesting them in the shares of the public firm increasing the level of cash flowing into the firm.

Of course, in order to justify a merger, the benefit of these synergies must offset in a relevant way the disadvantages of running a larger and more operationally dispersed firm with a greater degree of diversification.

In addition to this short overview of the synergies that might drive a merger, I now briefly introduce the behavioural corporate finance which anticipate the irrational behaviour and bias's introduction of managers during the negotiation process that I'll discuss further in the chapter three.

The behavioural corporate finance study the reasons behind why an individual acts in compliance of non-completely rational behaviour whenever he/she is in front of a complex situation which require a correct problem framing or a scenario analysis to then take a decision in accordance with the result. Prospect theory take into consideration this both aspect and, highlight that when an individual place himself in front of uncertainty, to maximize the outcome and, in this case the value creation and the return of the acquisition, he should weight probability of the outcome with the expected utility associated to each one and, then choose the one which maximize this computation. Conversely, the reality, is a way different from the theory and it was empirically proven that human beings tend to frame the reality following an heuristic approach dictated by bounded rationality that result in oversimplifying the problem and overlooking some details. Still, the individuals do not consider the utility as absolute value rather the positive or negative deviation from a reference point. In corporate

finance all this factors are translated in planning fallacy, excess of optimism and overconfidence of the CEO, and underestimation of the risks of entering negotiations.

2.2 Governance mechanisms

Public organisations are not monolithic, which mean that exist a separation between who decide and how put the money inside the firm. I'm referring to the board of directors and the outside shareholder, investors in the market. Clearly the role of these two entities are different and, this separation of ownership and control is the source of agency conflict which corporate governance try to solve. The literature describes different types of agency conflict that may arise during the administrative course of a manager and, to grasp the relevance of the subject matter during the M&A I'll describe what the literature call expropriation and under provision of effort mechanism, which are the result of the persistence conflict of interest between the parties.

Whenever a manager needs to take a decision whether to invest or not in a target, for instance, he or she makes that decision on behalf of shareholders. Expropriating them means making them with a lower than one return on investment fraction, in favour of choosing more risky paths to undertake, that, grant them more benefits and perks strictly related with their contract and, consequently increase their personal return on investments. Tangible consequence of this behaviour might be class action of external shareholders, which legitimately claim against the manager for the misalignment of

incentives reflected in taking decisions not appropriate with the interest of external shareholders.

On the other hand, the under provision of effort is something way more difficult to measure and observe respect to the previous case. A company and so the shareholders want a CEO fully committed and devoted to make the firm prosper in a sustainable way and, to do so the effort required in managing the company is high. The underlying solution of this problem is to give enough incentive to the manager, but, together with the solution comes also a problem related to the nature of effort which is uncontractible and unobservable.

The dualism between ownership and control is reflected also when manager has to choose the level of effort to put when managing the company. Indeed, the CEO wants to maximize the difference between the level of wage he or she is entitled, function of profit generated by the firm, and the cost of effort. On the other hand, the shareholders want to maximize the difference between what actually can be observe as profit resulted by the effort of the manager and, the wage the firm owe to the CEO.

To actually solve this maximization process, the only tool in the hand of the firm is to correctly design and structure the incentive plan for the managers maximizing the surplus for both managers and shareholders.

“The corporate governance is the collection of control mechanism that an organization adopts to prevent or dissuade potentially self-interested managers from engaging in

activities detrimental to the welfare of shareholders and stakeholders”. In addition to the previous mechanisms, in some organization is relevant the monitoring role of ad-hoc nominated committee or of some shareholders, owning in-voice share, in charge of monitoring the CEO’s activities.

Concerning the external governance mechanism the market for corporate control plays a great role. Despite the effort and the complexities to measure it, the work of the managers has a value itself and, it is contestable. This result in managers that can take over the firm within bad management inside it and, makes it work better to generate more value.

If the market would be perfect, then would not be necessary to have anti-takeover protection, but the market for corporate control doesn’t work like this. To better understand how the market for corporate control regulate the manager behaviour can be taken into consideration the case in which the labours and customers do not want to be expropriated by the company and its product (quality). In case of monopoly the customers have no choice, so they got no means to punish the managers. If you have competition in the market, you going to switch the company from you are buying, making decrease the sells of the previous company and, then the CFs and consequently the share price. As well the labour market which in a competition environment offer the expropriated workers the possibility to punish the company by switching to another. The bottom line is that competition works as governance mechanism.

3. Main dimensions that affect the deal to be closed.

In this chapter are analyzed some of the relevant factors responsible for driving the directors' decision. These factors are relative to macroeconomic conditions, firm capital structure and the personal connections of the CEO with other directors, especially the ones of the target firms and the peculiar clauses present in the contract of managers, including golden parachute, vested options, and others.

The reason behind this discussion is that mergers and acquisitions represent corporate operations were by nature of the negotiation and the decision process, interconnection among people became extremely relevant, so, it is essential as well to understand them to avoid falling into a pattern leading manager astray and ending in irrational choice.

In addition, I looked at other factors that can still affect the decision process but from a more tangible perspective, such as the financial one and geopolitical one. The latter has to do with a blended economic and continent-related aspects that possibly explain the merger wave phenomenon.

3.1 Board and firm attributes critical in acquisitions

The literature in the last ten years gives an exhaustive and robust explanation about the determinants of acquirer performances. It ranges from cash vs. stock offers and, characteristics of the bid, such whether it is a hostile bid or a tender offer but, the overall variation of the returns of the acquisition as financial operations remain unexplained and as evidence of that, the studies by *Moeller, Schilingemann and Stulz (2004)* confirm that just the 5% of the total variation in the acquirer return is explained by the cited above determinants. At this point is clear that the method of payment and, whether the takeover is characterized by hostile or friendly attitude, there are some firm-specific drivers of acquisition ignored in the prior studies that might help significantly to increase the explanatory power of the model.

Andrey Golubov, Alfred Yawson, and Huizhong Zhang decided to implement new features in the precedent regression model to better understand the source of returns. The turning point was to augmenting the regression model with a fixed effect, time-invariant and firm specific, rather than deal specific. The result shows an increase in the explanatory power of the model up to an R^2 equal to 12%. What is vital for the analysis is now to understand which dimensions are behind the fixed effect/persistence that might enhance the explained variance of the acquirer returns. They affirm that, despite some plausible firm-specific parameters, like personal motives of CEOs and, specific features that distinguish the top management team, the model's explanatory power does not improve. In addition to this, their work also tested the possibility of external, but

still firm specific, factor like having the "right" advisors during the deal. Although it seemed to have a good impact on the fixed effect and persistence's explanatory power, it couldn't improve it tangibly.

The studies found that the first imputable dimension able to make the model truly effective in delivering what drives the acquirer returns, revolves around the organizational chart and competencies/capabilities strictly related to the M&A departments, which are in charge of screening deals, performing due diligence, and undertaking most of the analysis behind the final acquisition decision. The other dimension affecting in a tangible way the result, has to do with the bidder-specific synergies like assets in place, considering both the buyer and the seller, at the moment of the negotiation and consequently the strategic role of the target in the process of value creation in that industry. Eventually, they prove out that the persistence is endogenously generated by the positive outcomes achieved by the board in the prior takeover acquisitions make experience crucial firm-specific parameter in the model.

Reinforcing the thesis of persistence generated with prior acquisitions, a crucial role is taken by the studies and research publication by *Jaffe, Pedersen, and Voetmann in 2013* when they highlighted the same positive behaviour by those firms managed by CEOs who have experienced proficient acquisitions. Indeed, they report that this aspect is economically meaningful since *"[…] An acquirer that was successful in its last deal and kept its CEO earns 1.02% more on its next deal than does a previously-unsuccessful*

firm that kept its CEO. This percentage difference is equivalent to a $175 million difference in value creation."

The board of director plays an important role when assessing and setting the rewarding mechanisms of managerial actions. Those are designed to provide the correct amount of incentives and to make mergers deliver great value. Indeed, a good incentives plan triggers the manager to choose the right level of effort and make more likely value-creation transaction to happen. In order to be more specific about rewarding clause, Harford and Schonlau published the article entitled. "Does the director labour market offer ex post settling-up for CEOs? The case of acquisitions" in 2013 and they examined the benefits strictly related to experience and ability in the director labour market. The results of this paper are important to understand that ex post settling-up incentives, which means granting future directorship to those managers who take part at the deal, have a weak impact on determining the level of effort choose by the directors during negotiation instances and then on the value creation of the deal. What explain this, is principally due to how the market for corporate control evaluates the experience respect to the ability of the CEOs. Indeed, in acquisition no matter the result in terms of value the transaction end up to has but, "*[…] both value destroying and value-increasing acquisitions have significant and positive future prospects in the director labour market"*.

Harford and his colleagues found out that the acquisition experience is more important than the ability itself when speaking in terms of labour market, since "*[…] the CEOs with acquisition experience are 12.7% more likely to have one or more outside board seats after retirement than CEOs without acquisition experience*."

Another dimension attached to the CEO motives and features that *Harford, Humphery-Jenner, and Powell* proved *in 2012* to affect the outcome of the negotiations is the concept of being "entrenched." Managerial entrenchment occurs when *"managers gain so much power that they are able to use the firm to further their own interests rather than the interests of shareholders."* Indeed, when these common situations figure out, this concept plays an important role in determining why value-decreasing acquisition is so diffuse.

The first behaviour associated with this manager's characteristic is that the manager disproportionately avoids private targets, which is associated with value creation. The second responds to the theory of preventing the transfer of valuable block holder to the bidder, whether the target is public or private. The former is recognised with a negative connotation since the bidder that use equity to takeover private target receive higher announcement return on average, as the studies by *Fuller, Netter and Stegemoller* in *2002* prove. In addition, the reason behind this choice is entrenchment preservation; *"[…] When a bidder buys a private target with stock, particularly one that is nontrivial in relative size, it creates a large shareholder because the ownership of the private firm is*

concentrated. This large shareholder then has the ability and motivation to monitor bidding management going forward".

The latter is directly tied with this citation, and for the same reason of maintaining the entrenchment, the managers want to avoid going toward the deal with equity purchase method since it encompasses the transfer of those block holding who have interests in supervising the job of the bidding management.

Eventually, in the article, to steer the attention on the ways entrenched managers lead to value destruction a distinction was made based on the GIM index. This index classifies the CEOs with respect to the number of antitakeover provisions the managed firm has: if this number is grater or equal than ten then the manager will be classified as dictator, otherwise he falls into the democracy category. Once this distinction was made a descriptive statistic for the acquirer characteristics was conducted and the results show that dictators have a high correlation between the variable describing the high level of free cash flows and the lower level of Tobin-q. This suggest that the dictator firms, despite paying lower premium, still overpaying because of low synergies with the target. Moreover, when looking at the CAR (Cumulative Abnormal Return) few days after the announcement the one of dictators firms is significantly lower respect to the democracy organization, since the market perceive the dictators firm takeover as negative in terms of value creation.

Often the CEOs evaluate also their IDH (Inside Debt Holding) when taking relevant decisions during merger and acquisitions negotiations. Indeed, this metric is computed as the present value of accumulated pension benefits and deferred compensation. Recent stream of literature reports that debt-like compensation packages, consisting in pension benefits and deferred compensation, account for a significant fraction of the total compensation packages, for this reason, this dimension is worth to be taken into the analysis. The results reported by Phan in his article: "Inside debt and merger and acquisitions" published in 2014 affirm that an high level of inside debt holding helps to align the CEO's incentives with the ones of bondholders so then to"*[…] alleviate managers risk-taking incentives, since inside debt is typically unsecured and unfunded, and if the firm go bankrupt, managers have claims equal to those unsecured creditors".*

The studies of Phan H. in 2014 explain a negative correlation between the value-creation of the M&As, the corporate risk taking, and a high level of managers' IDH. The analysis starts taking 891 firms that had a positive CEO inside debt from 2007 to 2010 and assess whether this factor influence the M&A propensity. The result is that a large relative CEO debt-to-equity ratio, as in the case of debt-like compensation packages is tied with industry diversification, smaller chances of a cash deal to occur, lower financial leverage and a smaller increase in firm risk post-merger. Indeed, the firm and the CEO will accordingly lessen the probability to invest in a risky project. On the other hand, investing in less and more stationary projects limits the transaction to transfer

wealth from bondholders to stockholders. Eventually, it is natural to now think that a correct and incentive thinking design of the compensation packages may steer the decision in the growth direction rather than remain still and lose the momentum to innovate and keep the pace of ever-changing industry trends.

To remain in the slippery of the topic discussed before, now we touch on an argument close to the executive compensation packages, but, instead of taking it from the perspective of the buyer's CEOs we're going to assess a dimension relative to the target's CEOs. We are speaking about the accelerated vesting of CEO equity awards, and to this aim, we take as reference article the one written by *Elkinawy and Offenberg in 2013.*

To better understand what we are talking is essential to clear the meaning of an option to be vested; this represents a very common piece of a compensation package when the firm wants to grant his/her CEO a considerable amount of shares as a reward for the results achieved in a certain period. The shares are given to the manager as soon as the contract is signed, but the shares themselves are freeze and cannot be traded on the market until the agreed date is expired. In this way, the manager benefits by trading them only if the market value positively his/her job in long term period rather for instance, exploiting the market enthusiast right after the acquisition. Then it avoids the manager being reworded for luck or irrational market behavior.

In addition to this classic scheme, some might be the case of accelerated vesting of CEOs' stock options and restricted stock to be included in the initial contract when a deal is closed. This means that a change in the vesting schedule occurs, and the equity grants become vested and unrestricted, and then the CEO have the right to convert equity grants into cash on the date the firm is acquired.

So, the scope of the studies was to understand this compensation feature's impact on the takeover premium.

The result confirms the hypothesis of a positive correlation between the negotiation of takeover premium and accelerated vesting option, and this means that the target CEO finds a meaningful incentive to negotiate the highest possible premium to immediately after the acquisition sells the vested share and make much profit out of it. In the broader view, this mean that the seller sold the firm to the best acquirer pursuing his personal incentives without caring about synergies and value creation for the shareholders ending up in expropriating them.

Another important recurrent feature in the compensation packages of the manager is the golden parachute. This grant to whoever has it among his contract clause a fixed reward in terms of cash whenever they are forced to close his position before the terms specified in the contract. This kind of situation might happen for both forcing by unhappy shareholder who have voting shares or from the Board of director.

Fich, Tran and Walkling in 2013 published an article which refer to this topic and, precisely, looking to understand the impact of this clause on the behavior of the managers when negotiating a takeover. To grasp the magnitude of this subject, this are the word of president Barack Obama on Feb. 4, 2009:

"Companies receiving federal aid are going to have to disclose publicly all the perks and luxuries bestowed upon senior executives, and provide an explanation to the taxpayers and to shareholders as to why these expenses are justified. And we're putting a stop to these kind of massive severance packages we've all read about with disgust; we're taking the air out of golden parachute."

During their job, manager always face the internal conflict of moral hazard; this means that they take an excessive risk or even decide to enter a contract, not in good faith but rather trying to take personal advantages in a desperate attempt to earn a profit before the contract is close and an agreement reach. The article takes a relevant sample of nearly 900 acquisitions from 1999 and 2007 and find that more important parachutes come together with higher chances of completion for the deal. Instead the parachute importance is inversely correlated with the takeover premium expected by the target shareholders. The former is highly intuitive since more excellent the parachute importance greater will be the willingness of the Target CEO to close the deal to receive instantaneous compensation regardless of the synergies and the assets in place of the buyer. The latter is a consequence of the former since the CEO

entitled to greater parachute is likely to be in a hurry and impatient to contract the optimal takeover premium for the shareholders expropriating them once more. Some of the crucial, in terms of statistical relevance determinants of the importance of a parachute are; age (the older the CEO greater the importance of the parachute) and then if the manager is also the firm founder or not.

3.2 The relevance of personal connections in acquisitions

In chapter 4.1, we analyzed the CEO's punctual features and his contract that determines biases during the negotiation process. Now the perspective is broader and wants to assess the importance of networking and relationship among different people that might interact differently because of that and the effects produced on the return of the deal.

The first article I want to highlight on this topic was published in *2012 by Cai and Sevilir*. They distinguish the board connections by two-degree type, labeled as the first and the second-degree connections. The former specifies the existence of a board member shared between the target and the buyer; the latter, instead, takes the case when at least one board member of the target and the buyer cooperate and are part of the board of a third firm outside the deal. The results reported from this article are positive, far behind the expectations. In the case of the first-degree connections acquirer benefit from a lower takeover premium and in the second case still the acquirer is better off

seeing a greater post-deal value creation. The reasons in support of these results are tied up with a better information flow, transparency, and communications, increasing the knowledge and understanding of operations and corporate culture. Then, the information advantages' straightforward consequence is a lower takeover premium because of the bargaining advantage in the negotiation due to private information about the target firm limiting the competition from outside less informed bidders. A collateral effect of this setting is the well-known as *Winner's Course* in which the less informed bidder although it knows knowing less end up in winning the bidding war overpaying the target. In the case of the second-degree connection the difference is that now there's no more than one single director representing both the target and the buyer's shareholder with the possibility of falling into the conflict of interest trap. Still, conversely now, there are two directors representing acquirer and target separately with less scope of conflict of interest working a grater overall value creation experienced by both the target and buyer shareholders at the deal announcement.

In contrast with the finding of the previous article, the studies *of Ishii and Xuan in 2012* found that *"[…] the extent of cross-firm social connection between directors and senior executives at the acquiring and the target firms has a significantly negative effect on the abnormal returns to the acquirer and to the combined entity upon merger announcement."* The result must be framed into a short-term merger performance perspective. The negative effect they refer to is due to weaker and superficial analysis

and then lowering the standards when negotiating with well-known directors shifting from a purely exchange-based mode of interaction to one based on norm and trust.

In addition, the results bring a critical findings related to a significant increase in the CEO's bonuses associated with the completion of the merger deal and the diffuse practice of retain the target director in the new board member lineup. Eventually, to confirm the bad choice the managers are likely to take in this situation Ishii and Xuan report an increase in the likelihood of the merged firm of being divested right after for performance related reasons.

To support these results, the article by *Schmidt* in 2015 considers the relationship between the CEO and his board of directors. To this, is important to have clear some concepts, particularly those related to general board theory. First, having an independent board will increase the firm value, especially when monitoring activity on the daily operation is crucial. It's clear that in this situation, having too extensive social tied between the board and the CEO deteriorates the monitoring job loosening the controls. The second principle is different and, as the advisory role outweighs the monitoring, only in this case, a close relationship between the board and the CEO can be helpful in improving the information flow.

3.3 Impact of financial constraints and capital structure on M&A decisions.

In this section, since the M&A event requires a significant capital investment, it is important to study the interrelationship between financing and investment decisions, and how they change regarding the bidder and seller characteristics.

The first macrophenomena that is important to mention are pointed out by the studies *by Almeida, Campello, and Hackbarth in 2011*, which are focused on a transaction type called "liquidity merger." This research started from a sample of over one thousand mergers from the same industry and, data were drawn from the security data corporation (SDC) database between 1980 and 2006. This transaction type stem by the interplay between the corporate liquidity and assets reallocation strategies so, the chance the acquirer has, to relocate their liquidity into financially distressed firms. What their model shows is that liquid firm is likely to acquire target, within the same industry, that not necessary create operational synergies then, the liquidity merger possibly happen in industry with high assets specificity but among firms where asset specificity is low granting a higher rate of assets transferability. The answer to this behaviour lies on top of the mechanisms that regulate the liquidity management. Indeed the model shows "*[…] credit lines might dominate alternatives such as cash and ex post financing in the funding of acquisition. In particular, it shows that credit lines can be particularly attractive source of liquidity for high net worth, profitable firms."* Moreover, the industry

assets specificity, plays a crucial role in this specific transaction since, the liquidity provided by the buyer, inside the industry, reduces a firm's cost of capital by more than outside liquidity provided by outside buyer as shown by Ortiz-Molina and Philips in 2009 in their article "Asset liquidity and the cost of capital".

Next, Erel, Jang, and Weisbach in 2015 investigated the impact of financially constrained target firms and their evolution in cash balance after the deal was closed. The research was conducted on those firms where the post-merger date was available. The results, as expected show that *"[…] previously constrained firms are likely to feel no longer constrained and the sensitivity of cash holdings and to cashflows declines as does the sensitivity of investments to cashflows. In other terms, the firms now increase their investments. This confirms the benefits of acquisitions from the financial perspective".*

Two years later, in 2017, Earl, Jang, Minton, and Weisbach added to the previous report an essential finding that stated the importance of cash holding and assessing it both in poor and good macroeconomic conditions. The takeover here was that a consistent level of cash holding during difficult times encouraged the firm to invest or at least be able to overcome the financial constraints induced by the economic crisis. On the other hand, during prosperous times, the retained cash causes the manager to overinvest in the target, lowering the return-on-investment ratio.

Vladimirov, in 2015, added to the method-of-payment literature an additional issue that goes behind the classic choice of the bidder to whether pay in cash or stock,

instead focusing his effort on understanding if a firm is better off in raising debt or equity when it is not able to finance the M&A operation internally entirely. The paper shows how access to competing financing is relevant and determines the level of takeover premium when the bidder selects the cash payment method as a payment method.

The results show that the bidder uses equity financing only when they have no access to competitive funding; indeed, in such cases, the bidder experiences a higher cost of financing, ending up bidding less, lowering the premium. Conversely, acquirers with sound access to competitive funding will likely raise debt and overbid the target. Comparing the two scenarios, the evidence shows a percentage delta of around 5-8% in favour of the takeover premium offered by the firms financed with a significant stake of debt rather than equity.

The debate on rising equity or debt when paying the target with cash is reflected not only in the takeover premium, which is lower in the first case with respect to the second but also in the market perceives this choice. Indeed when a firm chooses to raise cash through issuing equity, it is usually because the shares are overvalued, and the market reacts immediately, the investor will sell their shares, and the price consequently goes down. This effect is relevant since if the market reacts too strongly, issuing shares could be costly, making the firm lose some positive NPV projects like in the target case. Rising debt, on the contrary, is a more complex situation since the level of debt the managers

choose to raise can be greater or lower than the liquidation value of the firm (maximum level of debt), leveraging the asymmetric information with the market and trying to make profit out of it taking into consideration benefits coming from the completion of the acquisition. The debt signaling equilibrium regulates this situation, and in the first case, the market reacts positively understanding that the firm will increase its future CFs and will be able to repay its obligations. In the second case, the manager will cheat with respect to the market evaluation of the firm that will benefit in the short term, but right after the deal, the CEOs will have to face the cost of bankruptcy.

3.4 Cross-border M&A

The complication relative to cross-border activity mainly concerns asymmetry among political, cultural, and economic standards and norms. Especially the cultural distance was a matter discussed by Ahearn, Danielle, and Fracassi in their article “Lost in translation? The effect of cultural values on mergers around the world.” published in 2015, where is proved that the three critical dimension that impact this factor the most are trust, hierarchy and individualism, and they together make the “cultural distance” rise or shrink. The result is that the impact could be harmful if the cultural distance

increases costs like coordination and the ones related to information. Conversely, it might have a positive impact whenever the merged firm benefits from the diversity and skills from one another. As anticipated, when speaking about cross-border mergers and acquisition, we cannot exclude the role of the government authorities, and to figure this problem out, we refer to the studies by Dinc and Erel in 2013 that shows evidence on how in general, the country try to retain the domestic firm ownership within the country and for this reason take actions to make the acquisition by foreigner country more difficult and on the other hand help domestic country with financial and regulatory support to low the probability of foreign takeover. They also connect this behaviour with country with more nationalist leaning and the amount of anti-takeover provisions put in place to avoid cross-border acquisitions.

Ferrin, Jayaraman and Sabherwal, in 2013 took the overconfidence aspect of the CEOs and assessed it in relation to the country and the market where the firm is established. The result is that a country where individualism is emphasized such as Christian country or at least one with related background is more likely to have an overconfident CEO and all the associated disadvantages of having such a figure.

The way a firm is owned and controlled is of substantial interest in corporate finance and even more when speaking about mergers and acquisitions. After M&A events the ownership structure is likely to change in a relevant manner. It is also essential to understand the channels that might shape the mode of acquisition and the

subsequent control structure. Kim, in 2012, focused his attention on investor protection mechanism country related that translate into structural differences in ownership and control. In general, the level of investor protection limits the extraction of private benefits by the controlling party, and the acquisition paves the way for an ownership dilution or the creation of a pyramidal control chain. As reported by Kim, *"[…] if the bidding firm engages in (multiple) stock-financed mergers, it would lead to a substantial drop in proportional ownership of the bidder's shareholders over time, which, in turn, would facilitate widely held stand-alone style ownership structures. Alternatively, if the bidding firm acquires only a controlling stake in the target, hereafter referred to as the control stake acquisition, and the target acquires another firm through a control stake acquisition and so on, it would lead to the creation or expansion of a pyramidal business group."* Despite these general mechanism, the results of Kim's studies support the thesis that in country which is place good protection for the investors, the dilution of the controlling shareholders' stake and the potential loss of control would be little consequence, and the large shareholders do not need to worry about becoming a minority. On the other hand, in a country where investor protection is weak, large shareholders must worry about potentially losing their private benefits. To conclude, countries with low investor protection targets are likely to be engaged in control stake acquisition rather than a merger, leading to a creation of an intercorporate shareholding structure. Distinctions are also made at the level of the common and civil law system, and the chances of seeing a control stake acquisition

are 25% to 47% higher in civil law countries respect to common law countries._The second is that mergers are the dominant form of investment in common law countries such as United States and United Kingdom.

Huis and Powell brought additional support to the cross-board M&A in 2016, and in particular, they looked at the payment method and how it varies with respect to the target' country. The country-related dimension taken into consideration are based on transparency, corporate governance, and institutional quality. Once the bidder's due diligence work on these three elements categorizes the takeover as risky, also because of a lack of protective institutions, there is a chance of overpaying the target. Consequently, the bidder is better off in sharing this risk preferring the stock as a payment method since this help in sharing this risk between the acquirer and the target shareholders. When dealing with cross-country operations, the modern literature shows preference of target in being paid with cash given the relative lack of familiarity with the acquirer and its country. The result is that the acquirer is likelier to adopt stock payments whenever he believes that the differences in governance measures increase respect to the home country.

3.5 Merger waves and macro conditions affecting mergers

Now I want to consider the aggregate phenomenon resulting from the favorable conditions to merge and acquire a firm. It is called in the modern literature "merger

wave". Undoubtedly, there are drivers and factors crucial in the waves that turn out to be indicators for the positive outcome of the deal and make rational taking part in this phenomenon; on the other hand, as the literature show, this is not always the case and if not correctly evaluated the activity during the waves can result low in operational performance and then in return for the acquirer.

The first feature we might notice is the differences between private and public firms, as Maksimovic, Phillips, and Yang reported in their 2013 paper. They point out that if a merger wave reflects positive investment opportunities, it should be the same for private and public activities, but this is different. The changes in liquidity represent the first one and, in particular, the changes in the stock evaluation by the market, resulting in overvalued shares plus better and easy access to the capital stream; the second is a consequence of the former and is inherent by the fact of being public instead of being private; this gave the possibility to listed firms to actually benefit the overvaluation by the stock market and this translate in tangible opportunities to make in particular stock deals. To add consistency to this findings Netter, Stegemoller, and Wintoki in 2011 brought attention to the theme of productivity rather than secure and easy access to financials. They also confirmed that it's not just because of the former. Still, public participation in the waves is also baked by better productivity and efficient improvements in operational meanings.

Evidence were also found from an industry perspective analysis, and in particular, Ahern and Harford, in 2014 published a workbook where it was proven that the propagation of waves has a greater rate of diffusion especially in an industry with greater product market connections, also explaining the reason behind the cross industry merger. In addition, the topology network suggests that the industry seen as key for the product can start the wave phenomenon and let it spread for the reasons discussed above. Going deeper in this analysis hence looking within the industry rather than into its topology Garfinkel and Hankins in 2011 suggest that what triggers the wave phenomenon might be the operations that entail a vertical merger when the necessity to hedge from the uncertainty of the economic condition became highly relevant to avoid liquidations. The consistency of this result is especially related to the level of asset specificity firm that seen their cash balance being more sensitive in poor economic conditions.

In contrast with the previous works, which focus in understanding what drives mergers and why it can be considered a good choice, there's something negative in the takeovers during waves and this is explained by the research published by Duchin and Schmidt in 2013. In particular they refer to poorer quality of analysts' forecast, greater uncertainty, and weaker CEO turnover-performance sensitivity. Simultaneously with these conditions also, the penalties for entering inefficient mergers and the monitoring are reduced leading to inefficient operations. The first cause of poor acquisition is associated with a low level and quality of due diligence studies by the analysts that see

their workload increase unproportionally during the waves. The consequence is that with all this the information to be validated the possibility to fall in data pitfalls making then forecasting errors is high. The second is already been discussed but once more the uncertainty in industry trends, shock at the regulatory level and at the one of technology innovation might be considered now a source of poor quality mergers. Eventually, the CEO turnover-performance wants to look at the relationship between the dismissed CEO and the quality of the mergers. In this last case it was proven that the CEO turnover is more likely when the post-merger performances are bad.

All the above findings suggest an increase of agency driven acquisitions which are likely to result in worse quality, but as stated in the paper the poor quality merger can also be related to *"[…] managerial herding, unrelated to agency, in which managers rely on information embedded in the actions of their predecessors."*

4. Make the decision process data-driven.

At this point is clear that the possible dimensions to assess and, to back your business hunches up are many. Indeed, the Board's primary concern is to correctly come up with a decision based on KPI analysis, human capital, and financial structure of the target without stepping into hasty conclusions.

The scenario in front of those people is overwhelming, and the possibility of ending up in a value-destruction process is likely to happen. Moreover, as stated in the book *Designing with the mind in mind: simple guide to understanding user interface design guidelines* by Jeff Johnson, human beings are affected by unconscious mental processes, wrong problem framing, and biases related to past experiences and emotions. These difficulties can be handled by more efficient tools rather than our brains only. The solution is represented by BI software like Tableau that is used to create views and dashboards so that, whoever interacts with them can easily interpret the business insights and make more sustainable decisions rather than tie himself up to gut feelings.

In this chapter, we will briefly discuss the organizational changes due to the entry of new technical competencies needed to leverage BI tools in the most effective way and, the information flows that are now more effective among the departments involved in the M&A process, in particular between analysts and the BoD. Then we will face a real example discussing the possible deployment of this technology in the three macro phases of a takeover: pre-deal stage, deal stage, and post-deal stage.

4.1 Organizational chart and Tableau suite products

To fully understand the power and the usability of implementing this new *modus operandi* and make it then a best practice to follow to avoid value destruction, is now the right moment to integrate the subject matter into an entire organization and see how the organizational chart and the information flows might change in the sign of a data-driven environment.

During a classic M&A operation, the core of the decision process is bore by the board, which should take the correct decision on behalf of all shareholders of the company to create market value. As discussed in the previous chapters this effort is likely to be concentrated on the CEO and the consequence of this centralization of decisional power are biases in the decision process. Still, CEO often pursue strategies involving directly in the decision process external entities like investment banks for financial advisory and third-party consultants to help with the due diligence and valuation process.

Leaving aside all the spheres regarding legal and regulatory authorities needed in the contractual phases of the deal, with these actors in place come together also huge costs and, an increase in the complexity of information that flow in and out of the firm’s border. The more a process is fragmented in terms of the number of people involved, the more there’s the chance of losing the goal of the discussion and then the effectiveness of the solution, forgetting the real problem behind it. In addition, this is not

a concern only related to the scope and the mission but, also has to do with the human inclination to filter information reshaping them in a way different from the original one. This natural process is clearly to avoid, and this can happen by limiting the number of people between who take the decision and who advise for it.

One way to avoid and limit these costs and complexities is fore sure to internalize this consultancy operations. In order to cope with this step, the firm might decide to hire workers which are able to work with Tableau suite products or, training the IT department to do that. In this case, is clearly recommendable to train IT workers since they already have the background competences, or better the attitude, in learning business intelligence software like Tableau, increasing the learning rate and the integration process of human skills and capabilities needed to run it. Then, IT department will be responsible for gathering public data, relevant information on the target and then, develop views in accordance with the specifications given by the directors.

No external actors help limit the filtration phenomena and to go straight to the point in an effective manner. The scope of this new way to approach the problem is first to test out the target's fit, in terms of financial capability, human resources, and relevant metrics critical in the decision process and then make the analysis itself comprehensible to the board, by leveraging a more effective communication stream inside the organization.

At this point, two related issues arise. The first one is to make data understandable, insightful, and able to tell a story to whoever look at them and, to do that, you need to aggregate them correctly making the main dimensions of analysis emerge. The second is to share the insight within the organization and, in particular, with the board of directors.

To solve these two problems, we can rely on two Tableau suite products that helps to put the technical competences at the service of business departments and the board: Tableau Desktop and Tableau Server.

Before starting is crucial to know that in the majority of the case, Bigdata, useful for the analysis, are stored in complex relational database which are populated by tables of different kinds and each table is composed by fields (columns) and records (rows). To get out information and insights from this bulk of data we need to enable ourselves to interact with databases by asking them simple questions. For instance, considering a table where are stored data related to sales by sub-category of product, we might be interested in understanding which sub-category rank in the top three. The most general mean used to pose questions to database and retrieve the answer is a program language called SQL (Structured Query Language).

Tableau desktop help build views and dashboards (set of views displayed simultaneously on the same screen) intuitively. What make this process so intuitive is the UI of Tableau and the VizQL program language.

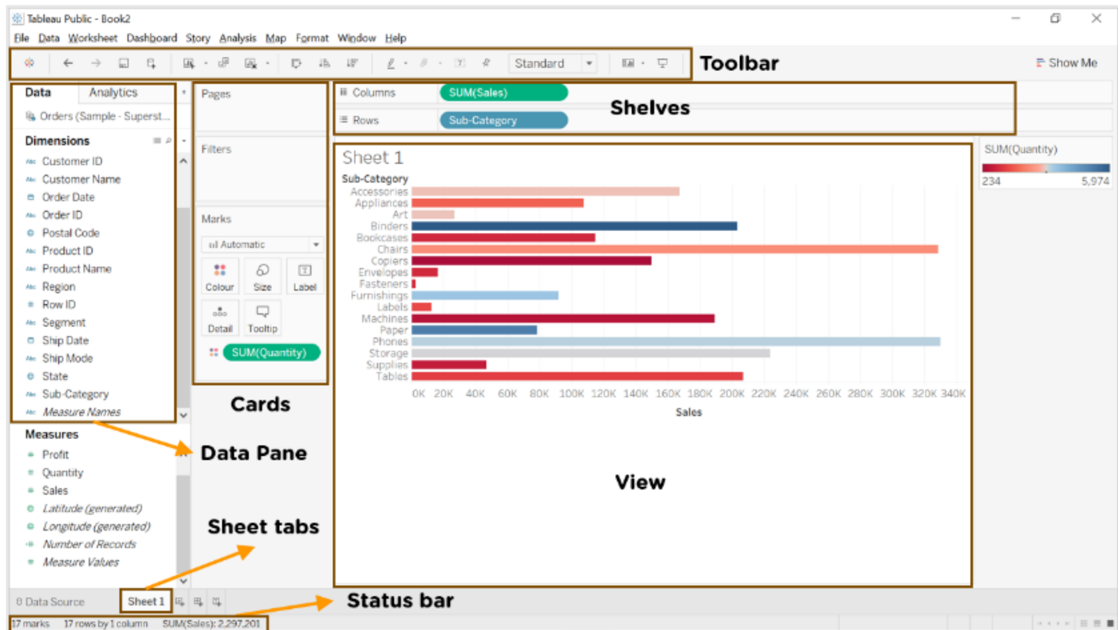

Figure 3

In the figure above is presented the user interface of Tableau desktop to understand what distinguish this software with respect to a mere line of code. Building views and retrieve insights in Tableau is simply enable by a drag and drop action which take the fields of the table displayed in the data pane on the left, to the shelves (rows and columns) directly seeing the result in the view pane. The drag and drop actions are translated into query to the database throughout VizQL program language.

Tableau Server, instead, is thought to share the former output (views and dashboard), within the organization and all the departments interested in valuable insight for making decisions. The specificity here is the possibility to assign a user role, so defining a hierarchy based on actions that can be taken on the published workbook, within the

server environment and, filtering the information and insight based on that role. Further technical clarification are made in section 4.5.

Approaching the end of this section is important to remain stick to our goal of describing the utility of BI software when facing an M&A operation. Indeed, when speaking of M&A intelligence we refer to the technology that can protect the buyer from the *"risk of merging with an untrustworthy organization, entering into an unprofitable deal, and experiencing a post-deal disaster by providing easy-to-grasp dashboards with targeted companies' relevant KPIs.".* With this definition in mind we now enter the relevant phase where the BI can be used describing in a detailed way the advantages and the problem it help to overcome.

4.2 Pre-deal stage

In this stage you're potentially in front of all existing firms and with them all the data related to P/E Ratio, EV/Sales and DCFs those able then to make you aware of the fair price o the target shares. To solve this overwhelming position grasping the relevant insights and avoiding overpaying the target is important that the analysts' team is able to visual represent the data by building revenue growth trends, analyzing profit margins and identifying the outliers in a clear manner. At this point of the deal is important to be aware that the data I'm talking are public of the target company since the two firm are not already into the deal.

The pre-deal stage is built up by two main subphases; the Due diligence and the Negotiation. The former is a mere studying of the possibility you have and is all about to understand the most fitting solution for you and which type of industry result most profitable to enter in.

BI tool can help a lot in this process since are able to aggregate data under different dimension like for instance market or just a temporal dimension to spot trends in that industry, making them readable and easy to understand by visualization tools. Business intelligence here is not just a matter of understand the profitability of the deal but is crucial also to understand the actual targeted companies' employees' skills and consequently identifying the most beneficial deal in term of social capital. The latter instead, is interesting since after having sent the LOI (letter Of intent) to the target company the bidder might ask for further data not analyzed in the due diligence stage hence, not disclosed to the public. This procedure is something that helps the buyer to mitigate the risk in entering in a bubble deal, asking for instance aged receivables report and then understand the amount of overdue receivables and the chances to have them back. An additional feature in the field of human capital is to deploy automated BI solution like WDC (web data connector) that are able to monitor the activities on Linkedin profiles of the key talents to retain and understand if they are actually looking for new position elsewhere.

4.3 Deal stage

During the deal stage the bidder and the target try to understand the possible set of synergies that are likely to emerge once the deal will be closed. This part is especially important when talking about vertical merger in industry where assets specificity is high since an exhaustive understanding of the assets in place and their level of performance can make the difference in term of productivity. A real example can be the one of analysing the equipment performance to limit the risk of downtime and then based on this make the offer. Still, when talking about merger between previously competing firm is crucial to understand how to determine the highest priority product and how to organize and set the level of effort to developing it. To this, BI tools, helps in identifying high margin product, where to produce and sell them and how much of them you should produce in accordance to the combined capacity of the firms.

In conclusion the Deal stage is necessary to start putting the hands on operational synergies avoiding to overestimate them and put too much expectation in the target's shoulder.

4.4 Post-deal stage

The post-deal stage is crucial since the buyer wants to maintain th same level of productivity and operational efficiency speed up the integration process of the two firms in terms of corporate culture and, organization. Now the bidder have access do

the big data of the target comprehending all the data covering from the employees capabilities to most hidden operations' result passing through the accountability sheets. Often big data acquisitions might be an overwhelming process especially when the industry is subject to relevant regulations system like the healthcare and the finance one. The BI helps the buyer to analyze the corporate culture of both organizations and blend them together in a consistent way making it last and, create an environment able to foster the team work even though the members are not coming from the sam firm. A tangible example of this procedure might be looking at the pay rate, grouping or adapting the salaries among the employees working in the same unit or, for instance, looking at perks systems between the two companies avoiding internal strikes or unmotivated workers.

4.5 Tableau server

Tableau Server's main application is to be able to disseminate the data and insights created by Tableau Desktop within an organisation that wants to move towards a data-driven culture, leveraging the communicative power of dashboards and views.

In this new environment, it is important to be able to determine a hierarchical order among users who can access and edit content within the Tableau Server sites. In this way, unnecessary duplication of data and incorrect manipulation of both data sources and views/dashboards can be avoided.

To do this, Tableau provides customers with three different types of licences that determine the type of access to contents and who can publish resources within the site. These will be assigned to users in a strategic manner to increase the effectiveness of workflows and data analysis.

It is important to clarify that licences determine roles within the Tableau Server environment, which in turn include specific sets of permissions such as downloading a view, deleting and editing content and data sources. The order in which we will describe the various types of licences and their associated roles follows a hierarchical, and therefore cumulative, order in terms of the permissions a user may have within the site, starting with the most restrictive to the one with the greatest authority.

The Viewer licence allows access to the content published on the site by displaying it interactively, and to subscribe to dashboards and views so as to receive updates whenever one wishes - or when the server updates the data sources feeding the dashboards. In addition, the Viewer licence allows you to download images, PDFs or Power Point (.pptx files) of the views provided, as well as the ability to export summary data (in Excel or CSV format). The only role that can be assigned to a user with this licence is that of Viewer and includes the actions described above.

The second licence is the Explorer licence, which allows you to work closely with the data already in the browser but does not allow you to create flows with Tableau Prep. Four different roles can be assigned to it. The most limited in terms of actions is the Explorer role, which can do the same actions as the Viewer but with the ability to download data sources published on Tableau and make changes to dashboards published directly from the web. The second role is the Explorer authorised to publish and as its name implies its main feature is the ability to edit, save and publish views and dashboards on the site. The third is called the Site Administrator Explorer and differs from the previous one in that it has unlimited access to the configuration settings of Tableau Server's browser environment; however, it cannot connect to external data (virtual connections) and create new ones.

Finally, the most important licence is the Creator licence: it will allow its holder to create and publish views and dashboards with Tableau Desktop and to effectively manage data flows by preparing them ad-hoc with Tableau Prep. There are three roles in this licence. Creator provides the highest level of access to content for a user who is not an administrator, allowing them to connect to external data sources, create and publish workflows and workbooks, and use interaction functions for published views. Further up the Creator licence hierarchy is the role of Creator site administrator, which compared to the previous one can also manage site users by assigning them roles and

permissions. Finally, the most important role of all is played by the Server Administrator. In fact, in addition to having all the characteristics of the previously described roles, he is able to operate at the server level by creating sites and possibly also deleting their content.

5 Conclusion

The modern literature offers a great amount of evidences and specific studies related to the biases a manager might encounter during the takeover's negotiation process. What is certain is that the pathway that leads the manager to whether decide a merger or an acquisition to occur is distorted, missing the goal of delivering value to the shareholders. Among all the sources of distortion, agency conflict between ownership and control of the firm represent a milestone, leading manager to act in a self-interested way. This conclusion is reinforced by the magnitude in terms of transaction value reached by the market for corporate control year by year reaching its peak in 2021 by nearly hitting the six trillion of dollars. To overcome this problem to me is necessary a radical change within the organization shifting their culture toward a data driven environment empowering data and what they bring. The BI software like Tableau represent a tangible tool to create a trustworthy environment where data and their insight can be shared within the organization enabling cooperation and a more effective decision process.

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Figures

Figure 1 :

https://www.reuters.com/resizer/XbEoy2Ih9QxIPGVgAzZVq3p0pXI=/960x0/filters:quality(80)/cloudfront-us-east-2.images.arcpublishing.com/reuters/HEHEQDZSM5IDZK3EVZNCVRQSSU.png

Figure 2 : https://www.whitecase.com/sites/default/files/2022-01/us-ma-fy21-chart8.png

Figure 3 :

https://www.simplilearn.com/ice9/free_resources_article_thumb/DesktopInterface.PNG