A blueprint to exogeneous growth for small and medium B2B software firms

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Abstract

To survive & to strive, small B2B software firms need to reach a minimal efficient size. This phase of growth usually entails merging with and/or acquiring other business. This position paper provides a quick overview of the core drivers determining the value behind such an operation.

The article is designed for entrepreneurs. It articulates simple theoretical concepts stemming from Penrose's resources based view of the firm with notions of transaction economics. It illustrates them with simple examples on mono product/mono markets software firms. The article thus provides a simple explanation of the current valuation multiples for software firms which can be currently seen on the market place.

Keywords: Firm performance, Growth, Entrepreneurship, Software services, Mergers, Acquisitions

1. Introduction

Software firms distributing their services to other businesses [referred thereafter as operating in a B2B setup] are subjected to competitive pressure. To survive, they strive to perform. This entails a focus on growth, profitability, and productivity (Taouab and Issor, 2019). When it comes to growth, two avenues co-exist:

- organic growth, which consists in scaling a portfolio of innovative products built in house,
- exogeneous growth which consists in buying and operating an external portfolio.

If organic growth is interesting to prove the product market fit of a startup and is used to reach profitability for small and medium software firms, it often must be quickly completed by an alternative medium to support the development of a company (Laurie et al., 2006).

Businesses are indeed more and more polarized across most economic sectors (see (Simon and Bonini, 1958) for a seminal discussion on industries' consolidation). As a result, they are organized in two fringes. On one hand, small businesses (< 10M$ of annual revenue) can be found. This constitutes the "retail" segment of the B2B software firms' clientele. The retail landscape is characterized by the sale of off-the-shelf products. The segment is subject to limited legal constraints/ scrutiny and generally is the primary target of small and medium B2B software vendors. In terms of characteristics, this market pool can be consolidated with limited investments (seed, series A, series B), presents small acquisition costs and short sales cycles (e.g. couple of weeks).

On the other hand, lie large businesses (> 100M$). They represent sizeable accounts for B2B software firms and are specific because of their need for tailored solutions and software implementations doubled with complex legal constraints. Here sales cycles are drastically different as they obey to lengthy (several months / quarters) tender processes. Acquiring large accounts often require software firms to have reached a minimal efficient size (e.g. > 10M$ of annual revenue) to be even considered in a tender.

The key difficulty for software firms lies in the jump associated to the shift from a "retail only" clientele to a mixture of retail and large clients. Here, organic growth is usually insufficient to achieve the minimal efficient size enabling the acquisition of large clients. This is where and why exogenous growth is so important.

Considering exogenous growth through mergers and acquisitions mechanisms is however quite a shift in mindset for any entrepreneur operating a small or medium software firm, which has not yet reached this minimal efficient size. It not only entails identifying acquisitions targets and closing a potential deal, for instance with the support of a consulting firm specialized in M&A, but it also requires support in operationalizing the deal (and therefore a form of evolution in line with (Greiner, 1998)). And in both phases, it is important for entrepreneurs to be able to benchmark and pilot the performance of the service providers and/or resources they have onboarded to successfully go through the journey.

This position paper is thus intended as support material for entrepreneurs who would be sitting at this very crossroad and would be considering the next stage of the growth of their business. It is made of a collection of experiences and thoughts garnered in the field. It consists in a high-level recipe to qualify a potential M&A target. The associated illustrations represent real life scenarios and lessons learned.

From a structure standpoint, this article starts with a discussion on the key elements of any transaction: markets and products. It then carries on with an often neglected but tremendously important topic: resources & human capital. It concludes on second order considerations around time horizons associated to

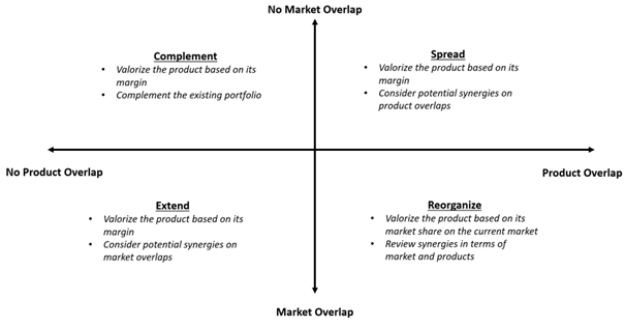

Figure 1: Possible markets & products scenarios when facing a M&A situation.

this kind of operations.

2. The tenets of an operation: markets and products:

A B2B software firm i can be described as an ensemble of N products (i.e. $\{P_1, \ldots., P_N\}$) and K markets (i.e. $\{M_1, \ldots, M_K\}$). Each product – market pair yields a revenue $R_i(P_n, M_k)$ and margin $\Pi_i(P_n, M_k)$. When looking at acquiring or merging with an external entity, a systematic and detailed review of the suitor product and market portfolio is in order. The analysis can be led as described in figure (1).

The product and market decomposition generates a simple first order value map $\Theta(P_n, M_k)$. When markets and products overlap, a reorganization is needed, and one product must be sunset. The value of the operation here thereby lies in the value generated by the migration. Calling $\phi_i(P_n, M_k)$ (resp. $\Gamma_i(P_n, M_k)$) the price (resp. the number of clients) of the product n on market k for a firm i, the value of the operation between two firms $\{i, j\}$ (with $\phi_i(P_n, M_k) > \phi_j(P_n, M_k)$) consists here in migrating the pool of clients to the product with the highest price (i.e. i) thus leading to a value of:

$$\Theta(P_n, M_k) = (\phi_i(P_n, M_k) - \phi_j(P_n, M_k)) * \Gamma_j(P_n, M_k) \quad (1)$$

In this case, the firm j which is the target of the acquisition (or merger) is valorized for the product and market where overlaps exist based on the associated revenue with a multiple representative of the industry and the business model of the product Ψ [1]. Note that this type of set-up and valuation occurs ,according to the recent study of (Shaffer, 2023), in about 20% of the operations. The price $V_j(P_n, M_k)$ for this piece of the portfolio is therefore:

$$V_j(P_n, M_k) = \Psi.(\phi_j(P_n, M_k) * \Gamma_j(P_n, M_k)) \quad (2)$$

Example.. *Let us consider a firm i with two products operating on one single market, looking to acquire another one (company j) distributing a single product overlapping with one of the firm i and operating in the same location. Firm i (resp. j) sells the product at price $\phi_i = 3k€$/year (resp. $\phi_j = 2k€$/year). Firm j has $\Gamma_j = 300$ clients. Migrating the client pool from firm j to firm i will therefore result in an economic uplift of 900k€ per year. Additionally, considering a valuation multiple $\Psi \approx 5$, firm j value would be, as a first order approximation, of $V_j \approx 3M€$.*

On the other hand, when products and markets partially overlap (or if there is no overlap at all), synergies must be analyzed. In this case the price of the element of the portfolio (P_n, M_k) at the firm j is a function of the margin $\Pi_j(P_n, M_k)$ (measured as the EBITDA) generated by the product on its market [2]. Looking again at the benchmarks from (Shaffer, 2023; Mukherjee et al., 2005), this accounts for more than 60% of the situation encountered in the market.

$$V_j(P_n, M_k) = \Psi * \Pi_j(P_n, M_k) \quad (3)$$

The first order value of the operation here is null

$$(\Theta(P_n, M_k) = 0)$$

as the operation consists in a simple economic transfer.
The overall transaction then consists of the sum of the individual prices of product & markets pairs across the entire portfolio: $V = \sum_{n,k} V(P_n, M_k)$ and generate an economic boon on areas of overlap worth: $\Theta = \sum_{(n,k)subjecttooverlap}(\phi_i(P_n, M_k) - \phi_j(P_n, M_k)).\Gamma_j(P_n, M_k)$.

Example.. *Consider the acquisition of a firm with a single product which does not overlap in terms of market nor portfolio with the future parent company. The firm generates 600k€ of annual recurring revenue through software licenses and generates a margin (EBITDA) worth 20% of its revenue. In this case, assuming a multiple $\Psi \approx 15$ (Officer, 2007), its value $V \approx 1.8M€$. Assuming that the underlying economics of the firm targeted by the acquisition are the same as in the previous example (300 clients and a license price of 2k€/year), it appears that the acquisition by a direct competitor is more beneficial than the acquisition by a neighbor. This would however have been different should the firm yield a higher profitability.*

Note that when a product and market simply complement a portfolio, the situation is extremely easy. However, when markets or products present overlaps, decisions must be made regarding resources. This will be further discussed in the following section.

[1] For instance, for a product sold via annual licenses with a client churn of ν, the multiple Ψ for a revenue based valuation is worth about $\frac{1}{\nu}$. As a result when client churn is in the 20% (a common benchmark in B2B softwares), the multiple is in the $\Psi \approx 5$ range. Note that multiple can be altered considering the current economic landscape (notably the value of the current risk-free rate).

[2] One simple way to interpret the multiple Ψ here, is to look at the rate r at which the margin erodes on a product if nothing changes and to derive the following approximation $\Psi \approx \frac{1}{r}$. Margin erosion can be due for instance to pricing pressures, losses on clients that can not be compensated with the current sales resources or exponential production & maintenance costs due to legacy products.

3. The question of resources:

In the B2B software industry, capital is first and foremost human in nature (a statement which finds its roots in the seminal resource based view of the firm developed by (Penrose, 2009)). On this front, two types of core resources co-exist: individuals dedicated to sales and workers dedicated to production. Sales representatives operate on a given market, while production workers operate on a given technology (i.e. Java, C++, .Net etc...).

The reason why this is so important to consider in this industry revolves around the fact that the labor market in the software industry is nowadays subject to a lot of tension (see (Breaux and Moritz, 2021) for a recent discussion). This is for instance illustrated by the annual turnover rate θ which is, on average, of about 20% (i.e. 1 individual out of 5 will exit the company over the next 12 months) at firm level. Given the costs associated to hiring, the situation of overlap both in terms of market and product (see figure (1)), represent a very significant opportunity in M&A. Of course, if one does not acquire (resp. merge with) a company solely for its human capital, it clearly is a first order component of the operation.

In case of overlaps, two scenarios can coexist. The first scenario consists in directly re-purposing resources when they already operate on the same market/technology, as synergies between markets & products are progressively found. The second consists in training them so that can move to an alternative market or product with a different technological stack. Note that for proponents of "bouncing" resources (clean slate strategy), it could be argued that given the current labor market conditions there is, at first glance[3], little need for "firing" type of actions. Migration plans associated to overlaps indeed often spans over a couple of years, a time-frame during which most resources will already have exited the company.

Now, to further understand the value of human capital, it is interesting to play with a toy model quantifying the benefits of an acquisition / a merger. Let us assume that the company j considering an operation presents a volume of sales resources $V_j^s(M_k)$ (resp. production resources $V_j^p(t_l)$ with a technological know – how on technology t_l). Every year, the firm j looses a percentage θ of its workforce [4]. For every vacant position, two types of costs occur. First, a search fee (Finlay and Coverdill, 2000), usually a percentage $\kappa \approx 20\%$ of the position yearly wage [5] $\omega \approx 70 - 80$ k€/year has to be accounted for. Second, a loss in productivity happens. Given a worker productivity $\rho \approx 120$ k€/year (O.E.C.D. Benchmark), if the time required to fill the position is of $T_{hire} \approx 3 - 6$ months, the loss is worth $\rho.T_{hire}$. So, the resulting cost of turnover for the firm j on an annual basis is of:

$$C_j = (\sum_k V_j^s(M_k) + \sum_t V_j^p(t_l)).\theta.(\kappa * \omega + \rho * T_{hire}) \quad (4)$$

Example.. *For a firm of 100 individuals, given the orders of magnitude suggested in the previous paragraph, the cost of turnover is worth about $C_j \approx 1.5$M€/year . This is fairly significant as it represents about 12.5% of the overall budget associated to resources (i.e. about 8M€ per year).*

Now, when overlaps occur as part of a M&A operation, resources which can be perfectly substituted as they operate on the same market or the same technology yields a unit saving of $kappa.\omega + \rho.T_{hire}$, while resources which operate with a different set of competences can be retrained/up-skilled yielding a saving of $\kappa.\omega + \rho * (T_{hire} - T_{training})$ per unit (see (Anzanello and Fogliatto, 2011) for a review on learning curve and individual productivity). Assuming that the time required for training and the time required to hire is relatively similar, the order of magnitude displayed previously show that the most favorable scenario is one where no training is required as $\kappa.\omega \approx 16k < \rho.T_{hire} \approx 30 - 60k$.

Example.. *Assume a firm j of 400 individuals acquires a company i of 100 individuals with a perfect technological & market overlap (i.e. the most favorable scenario from a human capital point of view). In this case, the firm j incurs yearly costs of $C_j \approx 6$M€/year because of turnover of about 80 individuals per year. So, assuming the acquisition comes with a progressive re-purposing of resources over 2 to 3 years, about 60 resources are transferred therefore leading to an effective costs' saving of 2.5-4.5M€ depending on markets conditions. This is significant as it could represent 20 to 50% of the firm i market value (100 resources with 120k€/year of productivity yielding a margin of 20% results in a margin of 2.4M€/year, thus leading to a valorization of 10M€ for firm i).*

4. The journey:

Beyond any question of value, there is one last element to reflect upon: any M&A operation is a journey. And its success (or failure) depends on navigating two key time-frames. The first one is associated to the first couple of months following the operation. This is indeed where the operational blueprint of the operation gets structured and where all key resources are on-boarded. The second one is associated to the next 1 to 2 years as this is where operational results are expected. If the plan is broadly followed during this time span, the operation can be called a success. This is however notably tricky as 50% of the operations generally fail.

The first couple of months during which the operation is officialized are crucial, especially from a human resources perspective. The turmoil generated by the change usually first sparks additional turnover ($\Delta\theta$) on top of the attrition rate observed during normal periods. Second, the longer the "blueprint" period, the more uncertainty and strain on the firm and the higher

[3] This has of course to be nuanced as any company will come with his share of poor performers who need to be actively managed.

[4] For the sake of simplicity, the turnover will be assumed similar amongst the sales and production population. Some differentiation could however be easily introduced on this front.

[5] The benchmark stems from Big 5 European labor markets and includes taxes.

the turnover. Calling $\tau_{blueprint}$ the duration of this phase, and assuming a linear relation between the additional turnover rate observed during the operation and the duration of the blueprint time-frame, one way of quantifying this impact would be to assume that the underlying cost of the period is of:

$$C_{blueprint} = (\Delta\theta + \tau_{blueprint}.\delta\theta).$$
$$(\sum_{k}(V_j^s(M_k) + \sum_{t}(V_j^p(t_l)))(\kappa.\omega + \rho.T_{hire}) \quad (5)$$

Example.. *Assuming that such an operation yields an increment of turnover of $\Delta\theta = 10\%$, that the blueprint phase comes with a time frame of $\tau_{blueprint} = 6$ months and that every month yields an increment of turnover of $\delta\theta \approx 2$ % , an operation targeting a firm whose workforce is worth 100 individuals, is thus likely to yield a one-time cost of $C_{blueprint} \approx 1.6M€$. This is equivalent to an extra year of turnover and generates a loss for the target of the operation worth about 10 to 15% of its revenue.*

Revenue wise, the operationalization of a M&A operation yields its share of uncertainty in areas where products and markets overlap. Migration efforts for a product P_n on a market M_k do not indeed always yield the desired results. The economic boon and the portfolio valorization initially considered in the section 2 of the position paper must be nuanced. This is mainly due to two factors: time and resources. Time wise, the transfer of a clients' rooster is far from being instantaneous. So, the extra revenue associated with the pricing uplift gets delayed. The transfer usually occurs over $l \approx 2-3$ phases (Morris, 2012) [6] (spanning for instance over two to three years), where a portion ($\xi_1 <...< \xi_l$) of the clients $\Gamma_j(P_n, M_k)$ gets migrated. Some value is therefore lost here. Moreover, during this kind of operations, a portion of clients is lost (i.e. $\xi_l < 1$), which represents another market imperfection which has to be accounted for, not to mention that client churn $\nu \approx 20\%$ is still effective. Note that usually, a small portion of clients refuses to migrate (i.e. $1 - \xi_l \approx 10\%$). So, when considering time in the transaction (for instance via the discounted cash-flow method), it comes that the value of this section of the portfolio and notably the multiple Ψ used in the valuation can be explicited as:

$$V(P_n, M_k) = (\phi_i(P_n, M_k)).\Gamma_j(P_n, M_k).$$
$$\underbrace{(\xi_l.\sum_{i>l}(1-\nu)^i + \sum_{i\leq l}\xi_i.(1-\nu)^i)}_{\Psi} \quad (6)$$

Example.. *Considering the example of section (2) (300 clients with a 2k€/year license fee) and assuming that the migration occurs in two phases ($\xi_1 = 45\%$,$\xi_2 = 45\%$) with a client churn of $\nu = 20\%$, it comes that $\Psi \approx 3.24$. Note that this results in a much lower valorization for this section of the portfolio than the initial naïve valorization where $\Psi \approx \frac{1}{\nu} \approx 5$.*

But beyond time, an important element to take into consideration in the migration revolves around the resources needed to support it. Keeping the convention of the section (3), it can be assumed that to migrate one unit of annual recurring revenue $\frac{\omega}{\rho}$ resources are needed. As a result, it comes that the valorization Ψ multiple previously explicited can be adjusted to:

$$V(P_n, M_k) = (\phi_i(P_n, M_k)).\Gamma_j(P_n, M_k).$$
$$\underbrace{(\xi_l.\sum_{i>l}(1-\frac{\omega}{\rho}).(1-\nu)^i + \sum_{i\leq l}\xi_i.(1-\nu)^i)}_{\Psi} \quad (7)$$

Example.. *Considering the example highlight above and the order of magnitude in terms of wage ω and productivity ρ, it comes that about 2.5 workers are needed to operate the migration and the final valorization multiple if of $\Psi \approx 2.7$ [7]. This illustrates that migration efforts and the associated resources are extremely important to reflect upon as they destroy almost half the value of the portfolio.*

5. Conclusion:

This position paper provides a couple of benchmarks and explanations for any entrepreneur willing to leverage exogenous growth (i.e. M&A) so that his/her firm can reach, for instance, a minimal efficient size. The first section shows how the value of a portfolio of product can be estimated (whether it is based on a multiple of the revenue generated by the firm or of its margin). The second illustrates the value of human capital. The third highlights some additional frictions which must be accounted for to generate a suitable valorization scheme.

The order of magnitude displayed here are that at a product-market level, the value of an element of portfolio usually is of 15 to 20 times its EBITDA or 2.5 to 3 times its annual recurring revenue. Here the medium of valorization is topical to the fusion or acquisition situation. Human capital consideration should also heavily weight in. If the tension generated by the change inherent to the operation is likely to cost about 10% to 15% in yearly revenue, human capital could also increase the valorization multiple by one point (i.e. from 5 to 6 for instance).

All of this is of course subject to modification based on the context of the acquisition and beyond quantitative notions, a significant amount of attention should be paid to soft considerations. After all, M&A operations are first and foremost, human adventures rather than capitalistic ones ...

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[6] Interestingly, clients migration is much faster than softwares' migration. This later use case, typically encountered when questions arise of refactoring a legacy system, usually require 5 to 10 years of effort ((Bisbal et al., 1997)).

[7] This similar to valuation multiples historical records published by venture capitalists (see https://aventis-advisors.com/software-valuation-multiples/ for instance)

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