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PRODUCT-LED GROWTH IN EARLY-STAGE B2B SAAS: A METRICS FRAMEWORK FOR ACTIVATION, RETENTION AND EXPANSION

CRESCIMENTO IMPULSIONADO PELO PRODUTO (PRODUCT-LED GROWTH) EM SAAS B2B EM ESTÁGIO INICIAL: UMA ESTRUTURA DE MÉTRICAS PARA ATIVAÇÃO, RETENÇÃO E EXPANSÃO

CRECIMIENTO IMPULSADO POR EL PRODUCTO EN EMPRESAS SAAS B2B EN ETAPAS INICIALES: UN MARCO DE MÉTRICAS PARA LA ACTIVACIÓN, LA RETENCIÓN Y LA EXPANSIÓN

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ABSTRACT

Product-led growth (PLG) is a go-to-market strategy in which the product itself is the main driver of customer acquisition, conversion and expansion. It has become a reference model for business-to-business software-as-a-service (SaaS) companies, a market that Gartner estimated at US$176.6 billion in 2022. Early-stage startups, however, often adopt PLG without a measurement system able to show whether the product is actually generating growth. Based on the literature published up to 2022, this paper proposes a metrics framework for PLG in early-stage B2B SaaS. The framework organises indicators along the acquisition–activation–retention–revenue–referral funnel, defines activation in terms of a first value moment, uses cohort retention as the central diagnostic, and links product metrics to unit economics through customer lifetime value, customer acquisition cost and payback period. It also discusses experimentation practices and the conditions under which a product-led motion should be complemented by sales. The main argument is that, in early stages, activation and cohort retention are better predictors of sustainable growth than acquisition volume.

Keywords: Product-led Growth. SaaS. Startups. Retention. Customer Lifetime Value. Metrics.

RESUMO

O Product-led growth (PLG) — ou crescimento impulsionado pelo produto — é uma estratégia de go-to-market na qual o próprio produto é o principal motor da aquisição, conversão e expansão de clientes. Esse modelo tornou-se uma referência para empresas de software-as-a-service (SaaS) voltadas ao mercado B2B (business-to-business), um setor que, segundo estimativas da Gartner, movimentou US$ 176,6 bilhões em 2022. Contudo,

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startups em estágio inicial frequentemente adotam o PLG sem contar com um sistema de medição capaz de demonstrar se o produto está, de fato, gerando crescimento. Com base na literatura publicada até 2022, este artigo propõe uma estrutura de métricas para o PLG em empresas SaaS B2B em estágio inicial. O modelo organiza indicadores ao longo do funil de aquisição, ativação, retenção, receita e indicação; define a ativação com base no "primeiro momento de valor" (first value moment); utiliza a retenção por coortes (cohort retention) como diagnóstico central; e conecta métricas de produto à economia unitária (unit economics) por meio do valor do tempo de vida do cliente (Customer Lifetime Value – CLV), custo de aquisição de clientes (CAC) e período de retorno do investimento (payback period). O trabalho também discute práticas de experimentação e as condições sob as quais uma estratégia baseada no produto deve ser complementada por ações de vendas. O argumento central é que, em estágios iniciais, a ativação e a retenção por coortes são indicadores mais precisos de um crescimento sustentável do que o volume de aquisição.

Palavras-chave: Product-led Growth. SaaS. Startups. Retenção. Valor do Tempo de Vida do Cliente (Customer Lifetime Value). Métricas.

RESUMEN

El crecimiento impulsado por el producto (PLG, por sus siglas en inglés) es una estrategia de comercialización en la que el propio producto constituye el motor principal de la adquisición, conversión y expansión de clientes. Se ha convertido en un modelo de referencia para las empresas de software como servicio (SaaS) dirigidas a otras empresas (B2B), un mercado que, según estimaciones de Gartner, alcanzó los 176.600 millones de dólares en 2022. Sin embargo, las empresas emergentes (startups) en sus etapas iniciales suelen adoptar el PLG sin contar con un sistema de medición que permita determinar si el producto está generando realmente crecimiento. A partir de la literatura publicada hasta 2022, este artículo propone un marco de métricas para el PLG en empresas SaaS B2B en etapas tempranas. Dicho marco organiza los indicadores siguiendo el embudo de adquisición, activación, retención, ingresos y referidos; define la activación en función del «primer momento de valor»; utiliza la retención por cohortes como herramienta central de diagnóstico; y vincula las métricas del producto con la economía unitaria (unit economics) mediante el valor de vida del cliente (CLV), el costo de adquisición de clientes (CAC) y el periodo de recuperación de la inversión (payback period). Asimismo, se analizan las prácticas de experimentación y las condiciones bajo las cuales una estrategia impulsada por el producto debe complementarse con un enfoque de ventas. El argumento central es que, en las etapas iniciales, la activación y la retención por cohortes son mejores indicadores predictivos de un crecimiento sostenible que el volumen de adquisición.

Palabras clave: Crecimiento Impulsado por el Producto (PLG). SaaS. Startups. Retención. Valor de Vida del Cliente. Métricas.

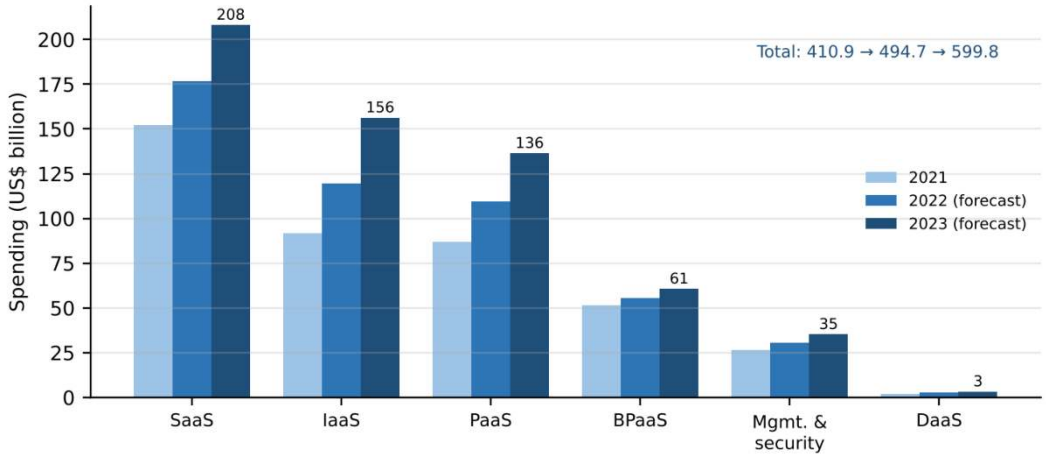
1 INTRODUCTION

Software-as-a-service has changed how business software is sold. In the traditional model, a sales team identified prospects, conducted demonstrations and negotiated licences before the customer used the product. In SaaS, the customer can often sign up, try the product and pay by card without speaking to anyone. Bush (2019) named this approach *product-led growth* (PLG): a strategy in which the product is the primary vehicle for acquiring, activating and retaining customers. The approach is consistent with the lean startup principle that products should be validated through measured customer behaviour rather than through assumptions (Blank, 2013; Ries, 2011).

The SaaS market is large and growing. Gartner estimated worldwide end-user spending on SaaS at US$152.2 billion in 2021, US$176.6 billion in 2022 and US$208.1 billion in 2023, making it the largest segment of public cloud services (Figure 1) (Gartner, 2022). For early-stage startups, this market offers low entry barriers but intense competition, and the cost of acquiring customers can quickly exceed the revenue they generate.

Figure 1

Worldwide Public Cloud End-User Spending by Segment, 2021–2023



Note. Prepared by the author with data from Gartner (2022). Values for 2022 and 2023 are forecasts. BPaaS = business process as a service; DaaS = desktop as a service.

A common mistake is to treat PLG as a pricing decision, such as offering a free plan, rather than as a measurement discipline. Without a clear definition of activation, without cohort analysis and without a link between product metrics and unit economics, a startup

cannot know whether free users are becoming paying customers or merely increasing infrastructure costs (Croll & Yoskovitz, 2013). This paper proposes a metrics framework for PLG in early-stage B2B SaaS, built on the literature published up to 2022.

2 CONCEPTUAL BACKGROUND

2.1 FROM SALES-LED TO PRODUCT-LED

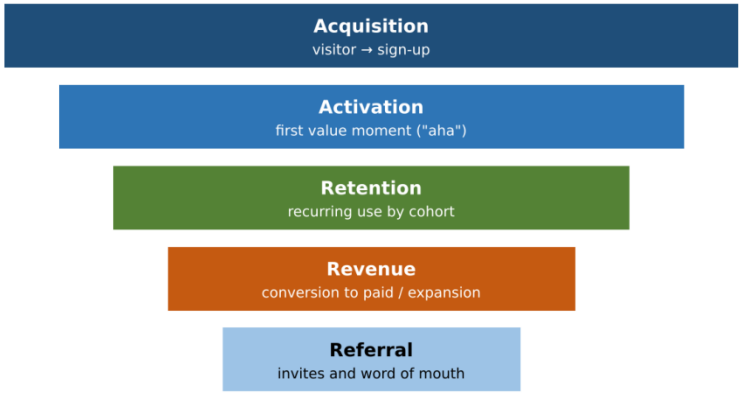
In a sales-led model, growth depends on the capacity of the sales team; in a product-led model, it depends on how quickly users reach value in the product and how naturally that value spreads within and across organisations (Bush, 2019). Tyrväinen and Selin (2011) showed that SaaS changes the marketing and selling process because the low cost of trial and the subscription model shift the emphasis from closing a sale to ensuring continued use. Moore (2014) had already described the difficulty of moving from early adopters to the pragmatic majority, which in PLG appears as the challenge of turning enthusiastic individual users into organisational buyers.

2.2 THE PIRATE FUNNEL

McClure (2007) proposed organising startup metrics into five stages: acquisition, activation, retention, revenue and referral, known by the acronym AARRR (Figure 2). The value of this model is that it forces the startup to measure each stage separately and to identify the stage that limits growth. Croll and Yoskovitz (2013) extended the idea with the concept of the “one metric that matters”, the indicator on which the team should focus at each stage of the company.

Figure 2

The Acquisition–Activation–Retention–Revenue–Referral Funnel



Note. Prepared by the author based on McClure (2007).

2.3 RETENTION AND CUSTOMER VALUE

The economic importance of retention was demonstrated by Reichheld and Sasser (1990), who found that, in the service businesses they studied, reducing customer defections by five percentage points could raise profits by 25% to 85%. Gupta and Lehmann (2003) formalised the value of a customer as the discounted stream of margins over the expected lifetime, which, under constant margin *m*, retention rate *r* and discount rate *i*, simplifies to

$$\mathrm{CLV} = m\,\frac{r}{1+i-r}. \qquad (1)$$

Fader and Hardie (2007) warned that projecting retention from aggregate averages overestimates churn in later periods, because customers with a high propensity to leave do so early; they proposed the shifted-beta-geometric model to account for this heterogeneity. For startups, the practical lesson is that retention must be analysed by cohort, not by monthly averages.

2.4 PROPOSED METRICS FRAMEWORK

The framework has four layers: activation, retention, monetisation and unit economics. Table 1 summarises the indicators of each layer.

Table 1

Metrics Framework for Product-Led Growth in Early-Stage B2B SaaS

Layer	Indicator	Definition	Main question
Activation	Activation rate; time to value	Share of sign-ups reaching the first value moment; time until it happens	Do users reach value?
Retention	Cohort retention curve; weekly active accounts	Share of each sign-up cohort still active after n periods	Do they keep using it?
Monetisation	Free-to-paid conversion; expansion revenue	Share of active accounts converting; revenue added by existing accounts	Do they pay more over time?
Unit economics	CLV, CAC, CLV/CAC, CAC payback	Value per customer versus cost of acquiring it	Is growth profitable?

Note. Prepared by the author based on McClure (2007), Croll and Yoskovitz (2013), Gupta and Lehmann (2003) and Bush (2019).

2.5 ACTIVATION AND THE FIRST VALUE MOMENT

Activation is the stage at which a new user experiences the core value of the product for the first time (Ellis & Brown, 2017). In B2B SaaS, it must be defined by an observable action that correlates with later retention, such as inviting a colleague, connecting a data source or completing the first workflow, not by a superficial event such as logging in. The definition should be tested empirically: the startup compares the retention of users who performed the candidate action with that of users who did not, and selects the action with the strongest association (Croll & Yoskovitz, 2013; Ellis & Brown, 2017). Because this comparison is observational, it should then be confirmed through experiments that make the action easier to reach (Kohavi et al., 2020).

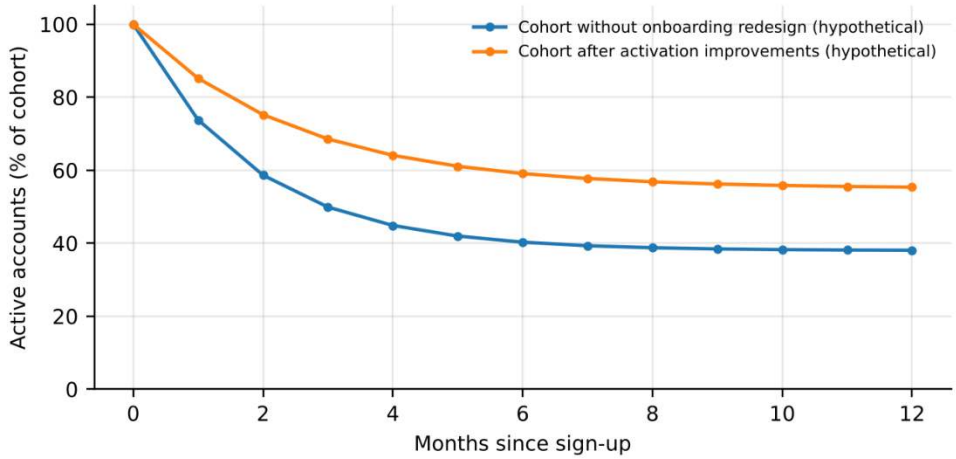
2.6 COHORT RETENTION

The cohort retention curve shows, for each group of users who signed up in the same period, the share still active after each subsequent period. Its shape is more informative than its level: a curve that keeps falling indicates that the product has not found a stable group of users, whereas a curve that flattens indicates that a core of users has found lasting value (Croll & Yoskovitz, 2013; Fader & Hardie, 2007). Figure 3 illustrates the effect that activation

improvements are expected to have on the curve: not only a higher level, but an earlier and higher plateau.

Figure 3

Illustrative Cohort Retention Curves



Note. Illustrative curves prepared by the author with hypothetical parameters, following the cohort-analysis approach of Croll and Yoskovitz (2013) and Fader and Hardie (2007). They do not represent measured data.

2.7 MONETISATION AND EXPANSION

In PLG, revenue often grows within accounts after the initial conversion, as more users, projects or units adopt the product. For this reason, the framework tracks expansion revenue separately from new-customer revenue. When expansion exceeds revenue lost to cancellations and downgrades, the existing customer base grows on its own, which is the clearest sign that the product is driving growth (Bush, 2019). The conversion from free to paid should be measured among activated accounts, not among all sign-ups, so that the effect of acquisition quality is not confused with the effect of monetisation.

2.8 UNIT ECONOMICS

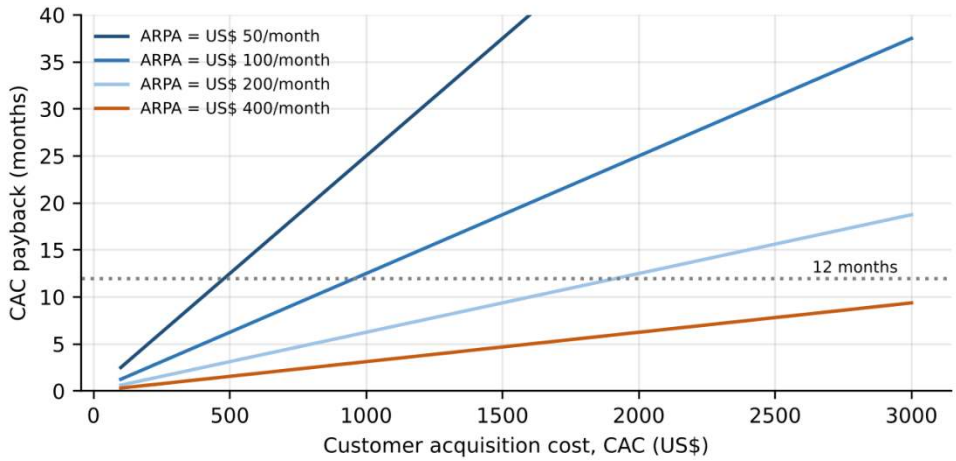
The final layer links product behaviour to financial sustainability. Customer acquisition cost (CAC) is total sales and marketing spending in a period divided by the number of new customers acquired. The CAC payback period is the number of months of gross margin needed to recover the CAC:

$$\text{CAC Payback (months)} = \frac{\text{CAC}}{\text{ARPA} \times \text{gross margin}}, \qquad (2)$$

where ARPA is the average monthly revenue per account. Figure 4 shows how the payback period varies with CAC for different ARPA levels, assuming 80% gross margin. For low-ticket products, even modest acquisition costs lead to long payback periods. This is why PLG, which reduces CAC by letting the product do part of the selling, is particularly important for products with low ARPA (Bush, 2019; Tyrväinen & Selin, 2011).

Figure 4

CAC Payback Period as a Function of CAC and ARPA



Note. Prepared by the author from Equation 2, assuming 80% gross margin.

2.9 EXPERIMENTATION

PLG relies on continuous improvement of the product experience, and improvements must be validated. Kohavi et al. (2020) describe the online controlled experiment as the most reliable method for establishing causality in digital products, and warn about common pitfalls: insufficient sample size, multiple simultaneous tests on the same metric, novelty effects and inappropriate metrics. Early-stage B2B startups face a particular limitation: the number of accounts is often too small for statistically powerful tests. In this situation, the literature suggests combining smaller qualitative studies, such as user interviews and session analysis, with experiments on high-traffic stages, such as sign-up and onboarding, and using leading

indicators, such as activation, as experiment metrics (Ellis & Brown, 2017; Kohavi et al., 2020).

2.10 WHEN PRODUCT-LED IS NOT ENOUGH

PLG does not eliminate the need for sales in all cases. Large organisations often require security reviews, contracts and integration with procurement processes that a self-service flow cannot handle. In these cases, the product generates qualified demand, through accounts with high usage, and a sales team converts it into larger contracts (Bush, 2019; Moore, 2014). The metrics framework supports this hybrid motion: accounts that reach activation, expand usage across teams and show retention above the cohort average are natural candidates for sales contact.

2.11 IMPLICATIONS FOR EARLY-STAGE STARTUPS

Five practical implications follow from the framework:

1. Define activation empirically, as the action most associated with later retention, and make it the main product metric in the first stage (Croll & Yoskovitz, 2013).
2. Analyse retention by cohort and look for the plateau before investing heavily in acquisition (Croll & Yoskovitz, 2013; Fader & Hardie, 2007).
3. Measure free-to-paid conversion among activated accounts and track expansion revenue separately (Bush, 2019).
4. Monitor CAC payback by acquisition channel and segment, and stop channels whose payback exceeds the expected customer lifetime (Gupta & Lehmann, 2003).
5. Validate product changes through controlled experiments where traffic allows, and through combined qualitative and quantitative evidence where it does not (Kohavi et al., 2020).

3 CONCLUSION

Product-led growth is more than a free plan; it is a discipline in which product usage becomes the main source of growth and the main source of information about the business. For early-stage B2B SaaS startups, the proposed framework places activation and cohort retention at the centre of measurement, links them to monetisation and unit economics, and

uses experimentation to validate improvements. In this framework, acquisition volume is a consequence rather than a goal: a product that activates and retains users generates the customer value and the low acquisition cost on which sustainable growth depends.

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