

Myth or Truth: Is there really a mature and sustainable Open Source Software market ?

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Abstract

Scholars, scientists and practitioners almost unanimously agree that Open Source Software nowadays offers viable technological opportunities to businesses regardless of their concrete field of activity. The time of predominant uncertainty on the evaluation, selection and integration of Open Source Software into businesses seems to have passed. Recent studies such as the one carried out by Heise Verlag in 2009 have shown that enterprises widely use Open Source Software even for mission critical infrastructural components. Nevertheless the Open Source hype period has passed as well. According to GartnersTM Technology Hype CycleTM the actual "Hype" is followed by a period of relative depression in which sustainable new business models as well as services shall be created around a technology thus shaping a mature and sustainable market. Within the scope of this paper we try to take stock of the situation and start a research to proof the existence of such a mature market and the way in which it is shaped from a supplier perspective.

1 Introduction

As already motivated in the abstract Open Source Software is not a hype topic any more. Not only a few early adopters but instead large portions of businesses regardless of their scale make use of Open Source Software at least for, but not limited to, infrastructural components such as file service, web servers or email. Recent studies such as the one Heise conducted in 2009 have shown, there are only a few companies left that do not use Open Source Software (see Diedrich, 2009).

Motivation

Besides the visible industry usage a vital multi national and multi profession scientific community evolved and has elaborated on different shaping factors of the Open Source movement. Due to the limited scope of this paper we will not recite differences and similarities of the acronyms F/LOSS and OSS as well as the corresponding software movements again here but use both acronyms synonymously throughout this article¹. A quite large body of publications aiming the different economic perspectives has been published during the recent years. Scientist such as Leiteritz (see Leiteritz, 2004), Krishnamurthy (see Krishnamurthy, 2005) and Brügge et al. (see Brügge et al., 2004, p. 95 ff.) either normatively or descriptively characterized different models on how OSS might fit into a businesses' value chain and what type of businesses will be or have been derived using OSS. Taking into account GartnersTM Technology Hype CycleTM the relative depression after a technological hype that is commonly known as "Trough of Disillusionment" focusses on the creation of business models and thus sustainable markets (see Fenn und Time, 2008). Based on the observations made by surveys such as the one published by Heise Verlag in 2009 we shall assume that there already is a visible and sustainable market either producing or serving around OSS.

Research Question

With this paper we would like to summarize the different categorizations commonly made in scientific publications in order to draw a consolidated picture of Open Source based business strategies as well as we try to find evidence of this categorization in the marketplace. After having done so, we'd like to draw a conclusion on the overall visibility and maturity of the OSS market. In order to finally answer the question whether the Open Source Software market can be viewed as stable and sustainable in the information technology sector we most presumably need to distinguish further by evaluating some work hypotheses.

¹interested readers will find an extended elaboration in http://www.dwheeler.com/oss_fs_why.html

2 Literature Review

As already mentioned to draw a consolidated picture of the proposed business models we took into account publications by Leiteritz (see Leiteritz, 2004), Krishnamurthy (Krishnamurthy, 2005) and Brügger et al. (Brügger et al., 2004). These are not the only publications about Open Source business strategies available, but we think that they reflect the status quo of scientific discussion quite appropriately².

Amongst the three cited sources the work of Brügger et al. has a broader scope than just the economic perspectives and business models of OSS. The authors clarify why it is potentially misleading to assume that Open Source is only developed by hobbyists for hobbyists but is rather substantially influenced by corporate workforce, either to break quasi monopoly (e.g. Microsoft in the Operating System sector) or to solve a inter-corporate problem (e.g. in the case of Apache)(see Brügger et al., 2004, p. 102). The authors distinguish into four categories of corporate involvement into OSS.

- Provision of OSS as complementary offer
- Usage of OSS for internal purposes
- Integration of OSS into own products
- Development of OSS as core business

Krishnamurthy (Krishnamurthy, 2005) while concentrating on the software and service-oriented business sector separates possible business models into three main types.

- Distributor
- Software Producer
- Third Party Service Provider

He further details *Software Producers* into those developing software and delivering it under a viral copy-left licence scheme and those that use non-viral licence schemes (e.g. Mac OS XTM includes certain parts of BSD). *Distributors* according to Krishnamurthy can make money by either, selling the product on physical media such as DVD, providing service to enterprise customers (e.g. installation, troubleshooting) or upgrade services. *Software Producers* can make money by selling a derived product (only in the case a Non-GPL licence is used) or services. Finally *Third Party Service Provider* make money by selling professional services to either corporate or individual users.

Leiteritz categorizes OSS business models into

- Product oriented business models

²a more exhaustive list of scientific, semi-scientific and popular publications can be found at (see Chen, 2010) though

- Service oriented business models
- Mediator business models
- Other business models

He further specifies *OSS Distributor*, *OSS Appliance Vendor* and *OSS Appliance Producer* as subcategories of the *product oriented business models* and tidily links each of the top-level categories³ to a value chain he adopted to Zerdick et al. (see Zerdick et al., 2001, p. 32) and Cimetiere (see figure 1). The differences of the three categorizations proposed are the level of aggregation⁴ and the point of view. While Brügge et al. concentrate on the demand side accentuating the applied usage model Krishnamurthy and Leiteritz cluster business models according to common business archetypes. However the remaining differences are minor ones, meaning that business models can be effectively separated by just determining the predominant revenue streams. These are either products or services. The only exception not immediately fitting into this even simpler categorization is the *mediator business model* described by Leiteritz since its prevailing revenue stream seems to be online advertising (see Leiteritz, 2004, p. 19). Nevertheless even the *mediator business modell* indirectly derives profit from offering a service (e.g. Sourceforge).

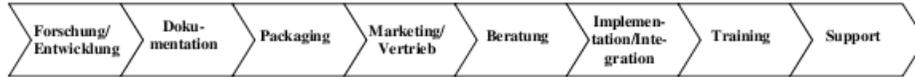


Figure 1: Software Value Chain according to Leiteritz (see Leiteritz, 2004)

While trying to describe applicable business models encircling OSS it is important to have a look at the potential revenue streams with respect to the product positioning as well. Delivering services on OSS, participating in OSS projects and producing OSS are not purely intrinsically motivated but instead follow common economic considerations (see Ghosh, 2005, p. 32 ff.). This is especially obvious owing to the fact that some companies like MySQL AB[®] or Alfresco[™] follow a dual licensing model, that allows them to capitalise on additional revenues from industrial customers. In this case the term *Commercial Open Source Software* is frequently used (see Riehle, 2007, p. 29). Krishnamurthy uses the portfolio analysis to segment the type of products potential competitors can act in. This method is quite popular for product segmentation since it visualises seemingly complex issues. In the referenced case Krishnamurthy attempts to differentiate according the *customer applicability*⁵ and the *relative product importance*⁶ of certain products as shown in figure 2. Summarizing his findings Krishnamurthy concludes that products in the *Stars* and

³omitting "other business models" for obvious reasons

⁴e.g. Krishnamurthy only uses three categories

⁵on the x-axis

⁶on the y-axis

High-profile nichers segment have the best market potential (green shades in figure 2) whereas the revenue prognosis for *Low-profile nichers* and *Mainstream utilities* is fairly bad (red shades in figure 2).

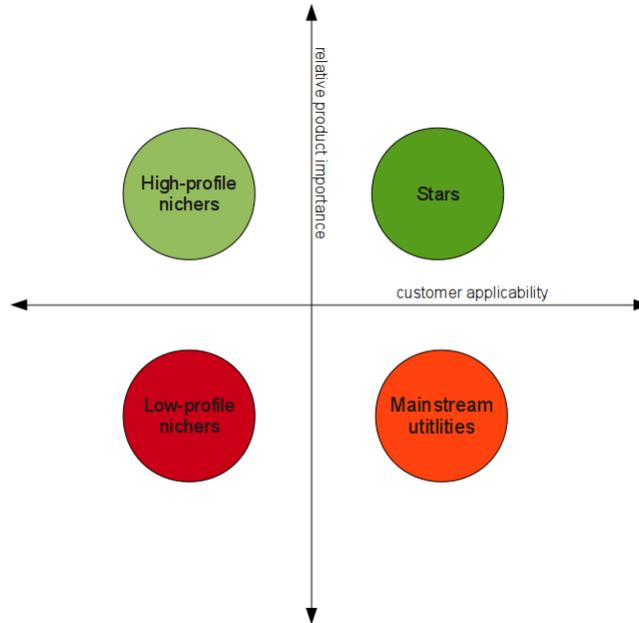


Figure 2: Product Positioning Portfolio adapted from Krishnamurthy (see Krishnamurthy, 2005, p. 292)

3 Applied Research Method

As Riehle puts it in one of his article introductions

Open source software has changed the rules of the game, [...]. In this new environment, developers strive to be committers, vendors feel pressure to produce open source products, and system integrators anticipate boosting profits. (see Riehle, 2007, p. 25)

He further states that '[...] system integrators, or solution providers, stand to gain the most from open source software [...] (see Riehle, 2007, p. 25)' and arguments that system integrators and solution providers, while they normally sell hardware, software and services as a bundle could profit the most from potential cost-savings of OSS usage and even charge their customers a larger surplus. The fact that the entire bundle can be sold cheaper⁷ even adds new

⁷by using OSS as the software component of a bundle

customers groups to the demand curve. Moreover he predicts that even market leaders in segments with high market-entry barriers (e.g. ERP-system vendors) will tend to open their products over time as it is fairly obvious that integrators, smaller competitors as well as the users all substantially profit⁸ from open source (see Riehle, 2007, p. 29).

Hypothesis

Together with the comparison of described business models (see section 2) we formulate following working hypothesis to guide our research.

Hypothesis 1 *Based on the assumptions of Krishnamurthy (see Krishnamurthy, 2005, p. 289 ff.) we expect vital evidence for the presence of open source businesses selling products and / or services in the High-profile nichers and STARS segment and comparably less of those businesses selling in the other two segments.*

Hypothesis 2 *Due to the argumentation of Riehle we assume that there are comparably more system integrators and solutions providers (i.e. companies that sell software, hardware and service as a bundle) than companies selling either of them only.*

Hypothesis 3 *Based on the assumptions of Riehle we further assume that there is visible tendency for smaller market competitors to open source their products.*

Data Collection

Since we assume that most of the customers use web searching technologies⁹ to obtain a market overview once a demand for *services* or *products* arises, we used that trivial method for our first research attempt to evaluate the aforementioned hypotheses as well.

To operationalise our search we used the following keywords to retrieve data in order to be able to draw conclusions on each of the our hypotheses. As an example for *Stars* we used Content Management System Software (CRM) and for *High profile nichers* Mail Transfer Agent Software (MTA). Similarly we selected Mesh Modeller Software for *Low-profile nichers* and File Duplication Finder Software for *Mainstream utilities* as Krishnamurthy uses two of them as examples as well.

We formulated the following search strings for the data retrieval:

- Search strings for H1 : CMS Software ($S1_a$), MTA Software ($S1_b$), Mesh Modeller Software ($S1_c$), File Duplication Finder Software($S1_d$)
- Search string for H2 and H3: CMS Software Open Source ($S2_a$), MTA Software Open Source ($S2_b$)

⁸includes taking market share from the market leader

⁹such as Google SearchTM

In order to evaluate *Hypothesis 1* we searched for a keyword matching a typical product in each of the four product segments (see figure 2). For the *Hypotheses H2 and H3* we only searched for products in the presumably more top-selling market segments¹⁰ and with the addition ‘Open Source’.

We then deeper looked at the 10 top-most ranked GoogleTM pages to evaluate the internet site according the evaluation scheme depicted in tables 1 and 2. For $S1_i$ we only considered entries that were obviously designed to market a business or make profit regardless of their concrete type of business. Consequently we conducted a in-depth analysis of each website that matched the initial restrictions. The sum of all applicable results can be found in the first column of tables 1 and 2.

Evaluation matrix for the first Search ($S1_i$)				
	OSS is core competence	Revenue through OSS based services	Revenue through OSS based products	Revenue through OSS based bundles
$S1_a n = 8$	3	2	2	0
$S1_b n = 5$	0	0	0	0
$S1_c n = 4$	1	0	0	0
$S1_d n = 7$	0	0	0	0

Table 1: Evaluation of $S1_i$

Evaluation matrix for the second Search ($S2_i$)				
	Revenues from products	Revenues from services	Revenues through bundles	Products went OSS
$S2_a n = 6$	3	5	3	5
$S2_b n = 3$	1	1	1	1

Table 2: Evaluation of $S2_i$

Interpretation

From the 10 top-most ranked GoogleTM links in data set $S1_a$, 8 represented businesses and out of those 3 had OSS as their driving force. For data-sets $S1_b$, $S1_c$ and $S1_d$ there were almost no visible businesses that dealt with Open Source (apart from 1 in $S1_c$). Nevertheless it need to be clearly said from the first that searching only for common key words such as CMS or MTA, generally suffered from lesser specificity, since for example the term MTA is also used for the Metropolitan Transportation Authority of New York. Furthermore the result sets of $S1_i$ tended to reveal links that either had a information function only (not fulfilling the precondition of business orientation in the first place) or coupled the information on a product segment with online advertising as the source of major revenues, rather than market a concrete product, service or bundle. Due to this relatively bad data quality the only finding that slightly

¹⁰namely Stars and High-profile nichers

approves hypothesis 1 is that for the *STARS* business segment we found 3 out of 8 valid entries to market OSS which is roughly the half.

The data sets $S2_a$ and $S2_b$ revealed more interesting data since especially $S2_a$ shows that the *Stars segment* is quite populated by OSS competitors. Interesting is, that it was more common amongst businesses to sell services than actually selling the product (using a dual licensing scheme). 3 out of 6¹¹ at least show that the vendors seem to be more service providers or system integrators than actually selling a product only thus fostering the validity of hypothesis 2.

As for hypothesis 3 we tend to believe that even though the data set is quite limited 5 out of 6 companies opening their product during the course of the time positively fosters the validity of hypothesis 3 at least for the *Stars business segment*.

4 Conclusion and Further Research

The data that can be obtained from a narrow in-depth analysis of simple GoogleTM searches is not sufficient to verify the existence of a mature Open Source market. Despite some of the search results show visible activity, especially in the *Stars segment*, considerably more research has to be carried out on the supply as well as on the demand side of OSS centred businesses. Unfortunately the existence of OSS does not make it easier to estimate a total market size for a given segment, hence estimating the market share, taken by OSS centred suppliers is also difficult¹². GoogleTM as the predominant information source can help finding market competitors. The time of predominant and widely observable IT vendors such as¹³ seems to be largely over. The collaborative development and shared costing approach OSS development fosters will further reinforce that trend. Nevertheless future research must be complemented by obtaining additional data through OSS centred mediator platforms like Sourceforge¹⁴ or Berlios¹⁵ and carrying out further surveys on the demand as well as on the supply side. Hence the question on the sustainability and maturity of the OSS market cannot finally be answered here.

¹¹1 out of 3 for MTA

¹²there is almost no data about revenues directly or indirectly incurred by market participants using or supporting OSS

¹³IBM[®], Microsoft[®] and SAP[®]

¹⁴<http://www.sourceforge.org>

¹⁵<http://www.berlios.de>

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