SSIS
Swiss Software Industry Survey

UNIVERSITÄT BERN

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INSTITUTE OF INFORMATION SYSTEMS
INFORMATION ENGINEERING

Swiss Software Industry Survey 2016

Current State, Emerging Trends & Long-term Developments in the Swiss Software Industry

A Study of the University of Bern on behalf of ICTswitzerland

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Note regarding use

Additional remarks

The report reflects the view of the authors which does not necessarily correspond with the views of the principal or of the support group.

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Dr. Thomas Huber

Prof. Dr. Jens Dibbern

Preface

Last year we kicked-off the Swiss Software Industry Survey (SSIS) in order to provide annually updated information about the current state, emerging trends, and the long-term developments of the increasingly important software sector. This year, the SSIS was conducted for the second time and has remained the largest study of its kind. Given the long-term character of the SSIS many things have remained the same: The SSIS still builds on an extensive contact database with more than 5'000 contacts. The SSIS still provides detailed information about past sales, profitability, and R&D investments. And the SSIS still draws a rich picture of expected growth of the Swiss software industry. Like last year, the SSIS 2016 features a special theme. This year's special theme is internationalization. Specifically, we look at the extent to which the Swiss software industry is internationalized, which countries are the most important export markets, and how Swiss software companies internationalize.

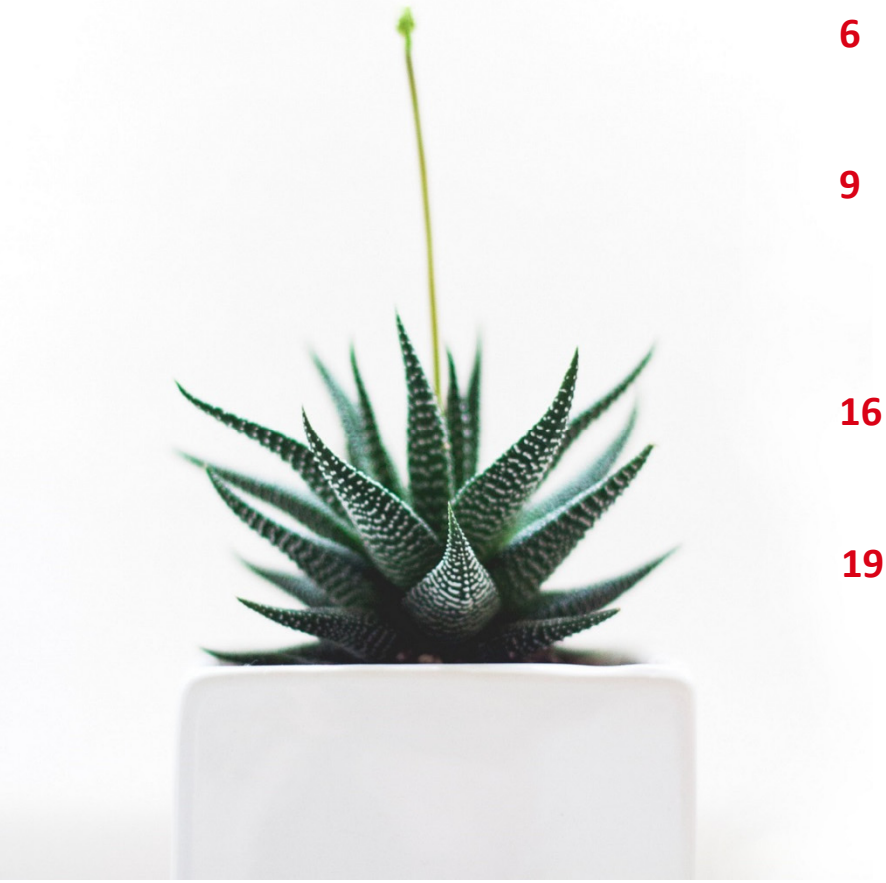
But the SSIS has also changed over the last year. We are glad that we entered into two new cooperations. First and most importantly, ICTswitzerland is the principal of the SSIS 2016. As such, ICTswitzerland helped us at all stages of this study and ensured that this year's special theme would be of interest for Swiss software companies. Second, the Institut für Wirtschaftsstudien Basel has supported us this year with their economic expertise to further increase the robustness of our results.

The report starts with a brief executive summary and then continues with more detailed analyses of revenue, profitability, and growth of the Swiss software industry as well as a special section on internationalization. We hope that you will enjoy reading this report.

Thomas Hurni

Dr. Thomas Huber

Prof. Jens Dibbern



High Revenue, Profitability, and R&D Investment

Standard software manufacturers, custom software manufacturers, and consulting companies generate 85% of the revenue in the Swiss software industry. With an average EBIT margin of 7.5% the profitability of the Swiss software industry is robust. The Swiss software industry also heavily invests into the future, spending 12% of their revenue for R&D.

7% **EBIT Margin**
12% **R&D**

Cloudy Outlook—Growth Expectations Decelerate

The Swiss software industry expects revenues to grow at 5%. This growth rate is 7 percentage points lower than last year. The cloudier outlook also manifests in the expected employee growth. Software companies plan to increase their workforce by 8.5% which is lower than the 12% in the year before. However, while last year freelancers grew much faster than permanent employees, this year the number of permanent employees is expected to grow faster (8.3%) than the number of freelancers (6.9%).

5% **Revenue Growth**
8.5% **Employee Growth**

Low Internationalization

The Swiss software industry is not very internationalized with software exports accounting for only 11.8% of the industry revenue. Exports are also not geographically diversified—with Germany accounting for 61.3% of all software exports. Swiss software companies are generally not particularly satisfied with their internationalization endeavors but there are stark differences in satisfaction: Standard software manufacturers evaluate their internationalization more favorably than custom software manufacturers.

11.8% **Export Share**
61.3% **Germany**

Drivers of Internationalization and Entry Modes

The internationalization endeavors of Swiss software companies are rarely driven by strategic considerations. Rather Swiss software companies tend to wait for opportunities for leveraging their existing skills in foreign markets or they follow their existing Swiss customers into foreign markets. Swiss software companies enter these foreign markets mostly through direct exports. However, such direct exports appear less promising.

3 **Drivers**
5 **Entry Modes**

Official Statistics - Employees and Added Value

Table 1: Distribution of Added Value in 2014 and distribution of Full-Time Equivalents in 2014 by industry

	Added Value	FTEs
Energy and Water Supply	1.61%	1.08%
Construction	5.35%	8.57%
Other Industries	19.46%	17.02%
Trading and Automotive	14.93%	14.08%
Hotels and Restaurants	1.77%	4.94%
Computer Programming & Information Services (NOGA 62, 63)	**2.23%**	**2.29%**
Financial and Insurance Services	9.85%	4.32%
Public Administration	10.79%	4.26%
Education	0.56%	5.50%
Healthcare and Social Services	7.58%	11.97%
Transport and Communications	5.91%	6.70%
Business-Related Services	10.89%	15.46%
Other Sectors	9.07%	3.81%
Total	**100%**	**100%**

Source: BESTA , Added Value 2014, FTEs 2014

The SSIS as Complement to Official Statistics

Data about the Swiss software industry is provided as part of official statistics nested in the broad categories of “Computer programming, consultancy and related activities” and “Information service activities” (NOGA codes 62 & 63).

The respective data on added value (~revenue) and number of employees from Swiss Statistics emphasize the major importance of the Helvetic Information Technology and Information Services sector. With more than 20 billion Swiss francs it adds roughly 2.5% to the Swiss GDP (see Table 1) and employs almost 2.5% of all jobholders in Switzerland (see Table 2).

While the Information Technology and Information Services sector is already of major importance, it also grew at a significantly faster pace than other major industries in Switzerland. Figure 1 illustrates this massive growth showing that the number of jobholders in this industry nearly tripled between 1995 and 2014.

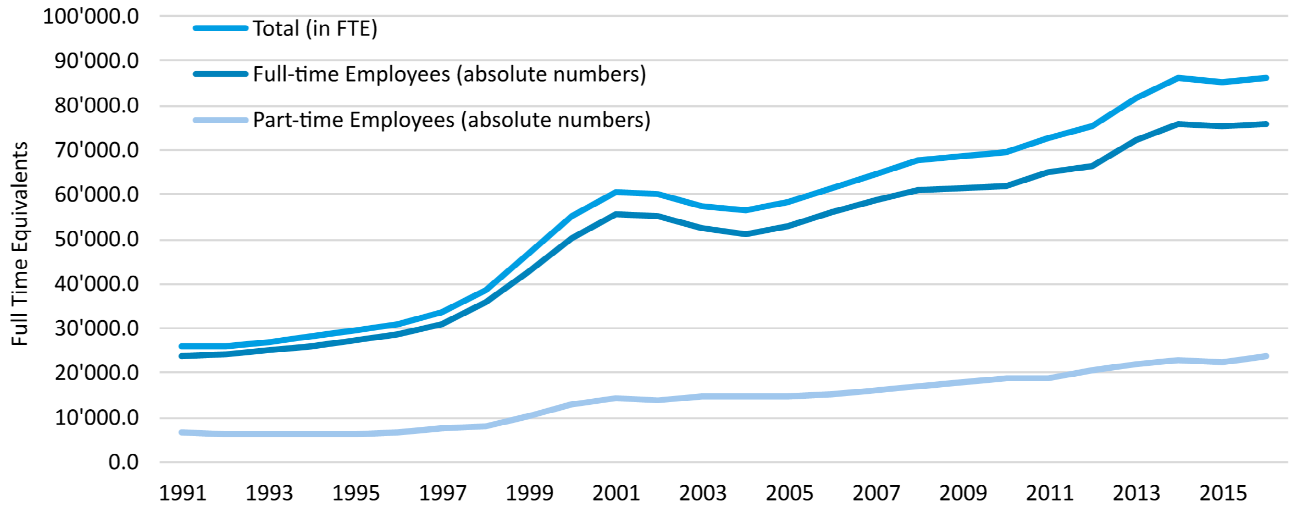
Official statistics provide reliable information about the size and growth of the overall IT sector. However, they do not draw a very detailed picture about the Swiss software industry.

Therefore, the SSIS positions itself as a complementary study that enriches official statistics. This is made possible by focusing on two NOGA codes (62, 63) and thereby ensuring compatibility with official statistics, while at the same time providing the reader with a richer picture of what is going on within these codes.

This report provides you with a more detailed picture of the Swiss software industry. In particular, the SSIS

Employees in the Swiss ICT Sector

Figure 1: Number of FTEs in NOGA 62 & 63 from 1995 - 2014



Source: BESTA 2014

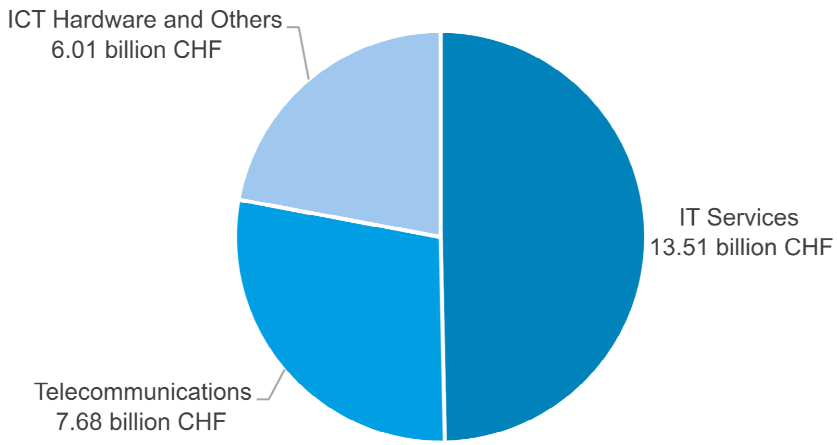
Drawing a Richer Picture of the Swiss Software Industry

focuses on IT Services (see Figure 2) and enables the following additional insights:

- Trend analysis on employee and revenue growth based on data collected in 2015
- Novel indicators about the industry's profitability and R&D investments
- Analyses along practically relevant categories (e.g., standard vs. individual software, permanent employees vs. freelancers)
- First look at internationalization

Value Added of ICT Sector in 2013

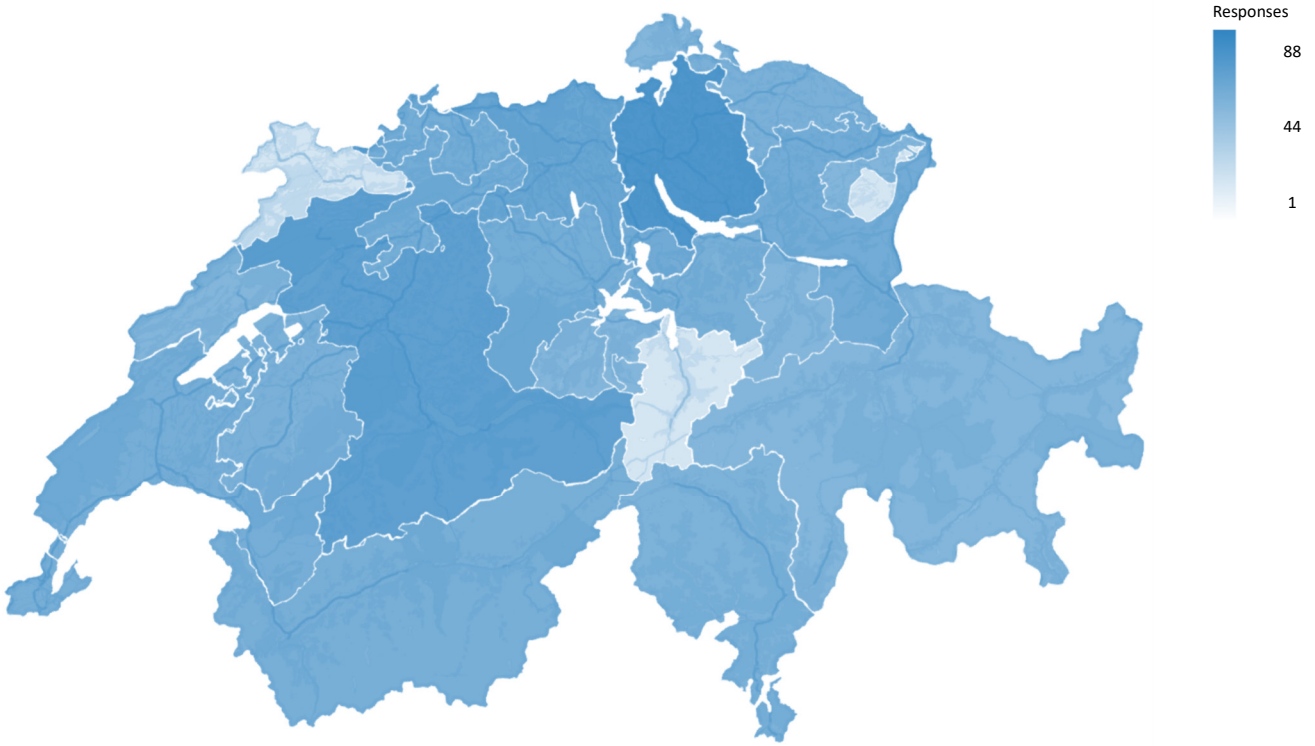
Figure 2: Value Added of ICT Sector in 2013 in billion CHF



Soruce: BFS VGR 2013, BFS Informationsgesellschaft 2015, revised series due to chances in the national accounts. Calculus: IWSB

Participants in 2016 - Geographical Distribution

Figure 3: Participating companies per canton



Source: SSIS 2016

About the SSIS in 2016

This year we conducted the Swiss Software Industry Survey (SSIS) the second time. With the second iteration, the SSIS managed to defend its pole position in terms of size, geographical reach, and methodological rigor:

Reach of the survey: The Swiss software industry aims to represent the entire Swiss software industry—rather than only a couple of large companies. Therefore, the SSIS…

- Builds on an extended and refined high-quality contact database with approximately 5'000 validated Swiss software companies
- Covers all Swiss language regions
- Covers 24 cantons (see Figure 3)

Rigor of the survey: To meet highest research standards...

- … we developed, refined, and assessed new constructs by following state-of-the-art procedures for construct development
- … we strived for a large sample size and achieved this goal with 576 participants, 268 complete responses, and 225 data points on revenue and profitability
- … we teamed-up with IWSB to extrapolate our results using state-of-the-art econometrical procedures (post-stratification)

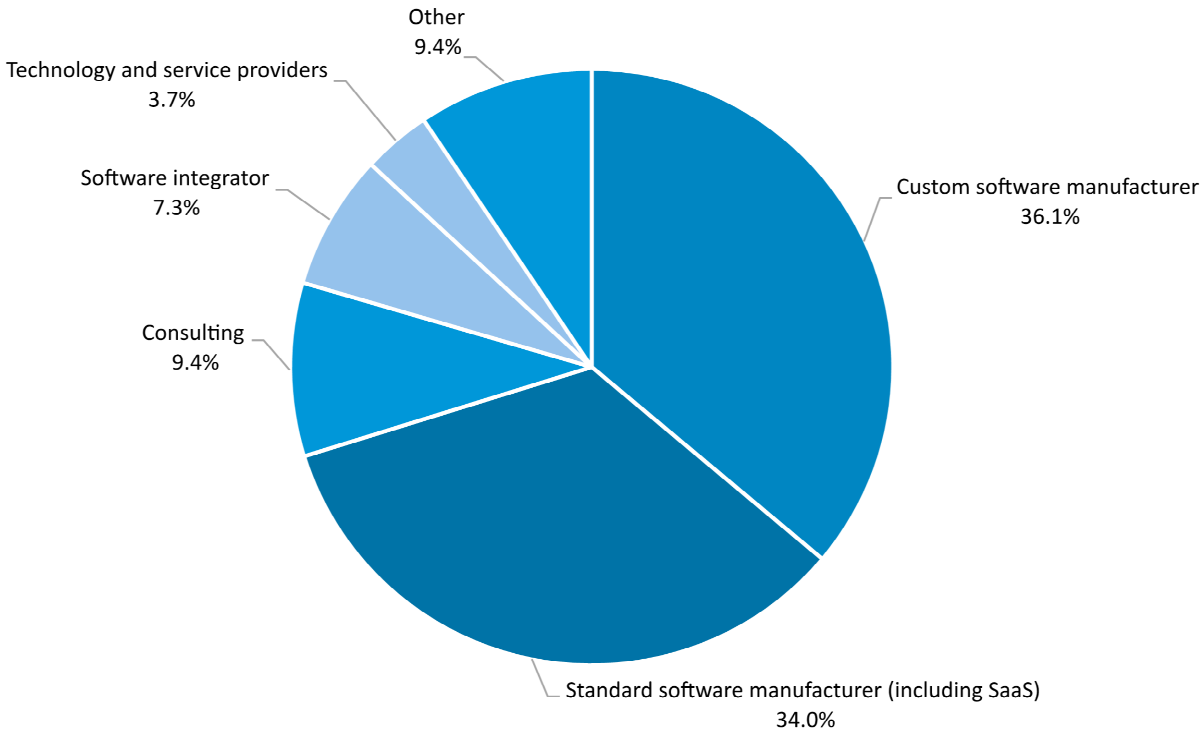
Additional benefits for participating companies: All participants of the survey can compare their own performance against other companies using our benchmarking website. In addition: Companies which participate regularly can now benchmark their performance over time (**www.softwareindustrysurvey.ch**)

Spotlight on

Revenue, Profitability & Future Growth

Distribution of Participating Companies

Figure 4: Number of companies per subindustry as percentage of total responses



Source: SSIS 2016

N = 192

Manufacturers of Custom and Standard Software Dominate

Individual and standard software companies dominate our sample—each accounting for about one third of responses. Consulting follows at some distance with roughly 10%. Software integrators account for approx. 7% of the companies in our sample, and Technology and service providers for 4% (see Figure 4).

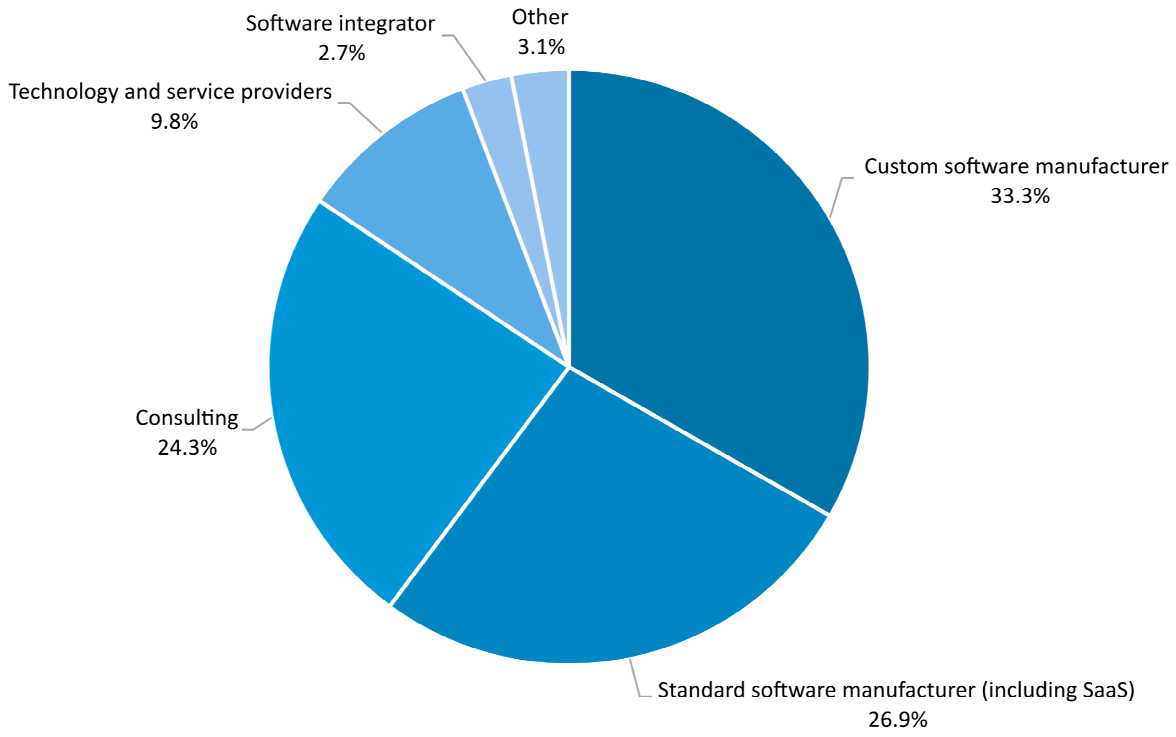
This picture changes slightly when looking at revenues (see Figure 5): Custom software manufacturers generate 33.3% of the revenue in the Swiss software industry, whereas standard software manufacturers account for 26.9%. Notably, while consultancies represent only 9.4% of the companies in our sample, they account for 24.3% of the revenue. Similarly, technology and service providers account for 4% of the companies in our sample but for 9.8% of the revenue.

This year's SSIS provides an even richer picture of how this revenue is created, i.e., we asked each company what proportion of revenue comes from their core business. This acknowledges for example that while manufacturers of custom software create most of the revenue with tailor-made pieces of software, they may also create revenue from standard software, or consulting projects.

Figure 6 shows which percentage of revenue in the Swiss software industry emanates from custom software manufacturing, the development of standard software, consulting, etc. This analysis shows that custom software manufacturing is responsible for 32.8% of the industry revenue, standard software manufacturing for 27.3%, software integration for 8%, and technology and service provision also for 8.9%. Notably, this analysis shows that consulting only accounts for 13.8% of the industry revenue while consulting companies create 24.3% of the revenue. This suggests that consulting companies are more diversified and also make considerable revenue from other activities—most importantly the development of custom and standard software.

Distribution of Revenue per Subindustry

Figure 5: Revenue per subindustry as percentage on industry revenue

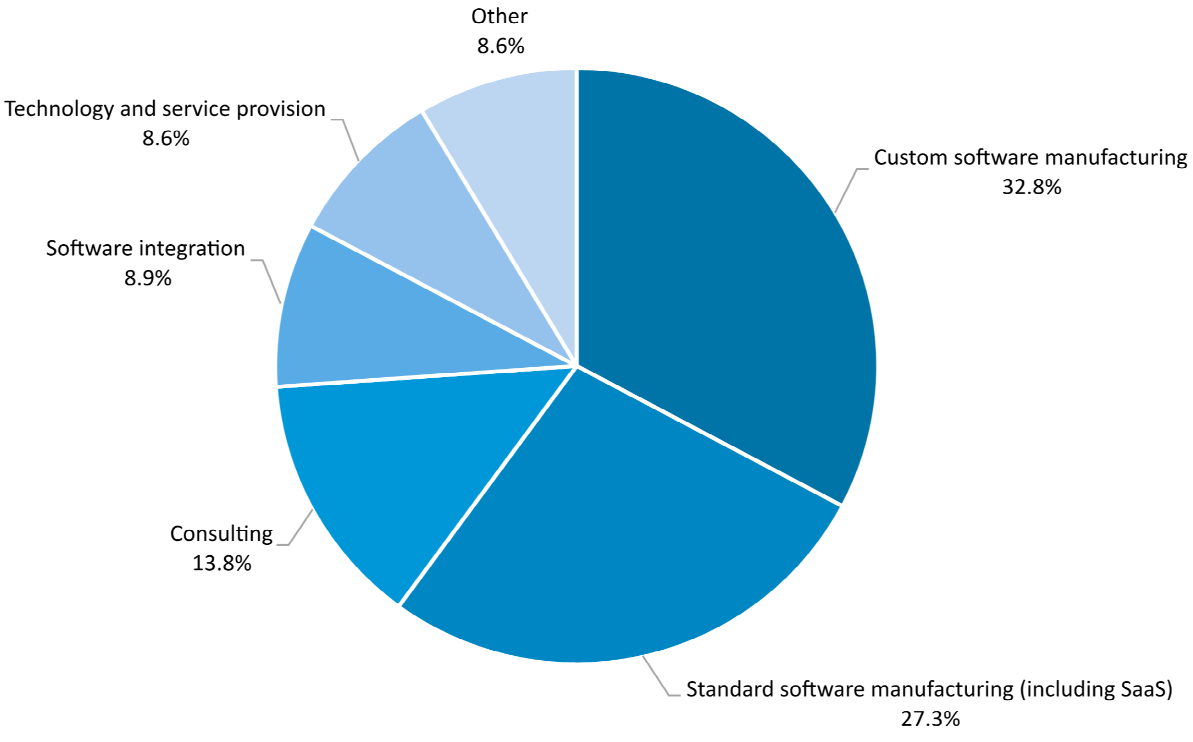


Source: SSIS 2016

N = 192

Distribution of Revenue per Activity

Figure 6: Revenue per field of activity as percentage on industry revenue

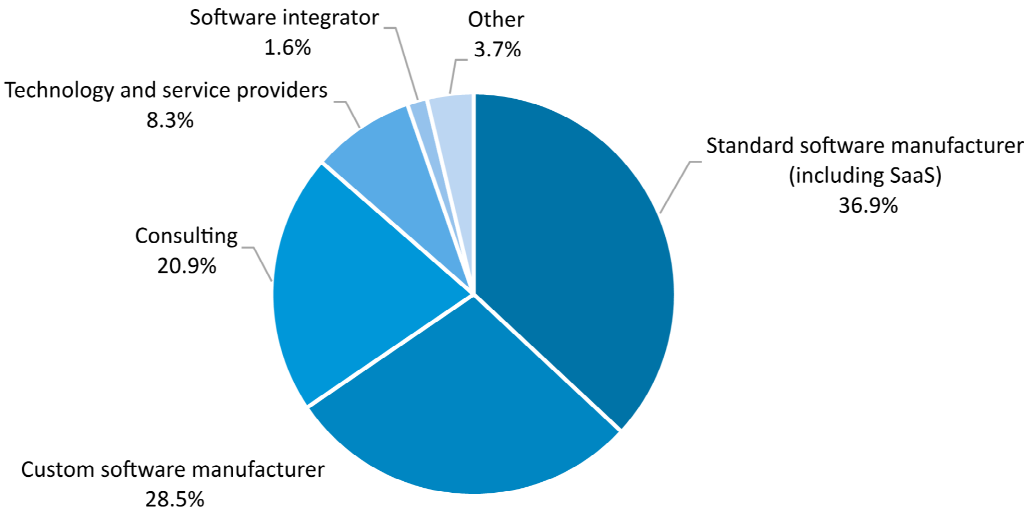


Source: SSIS 2016

N = 192

Distribution of Employees

Figure 7: Number of employees per subindustry as percentage of total employees



Source: SSIS 2016

N = 261

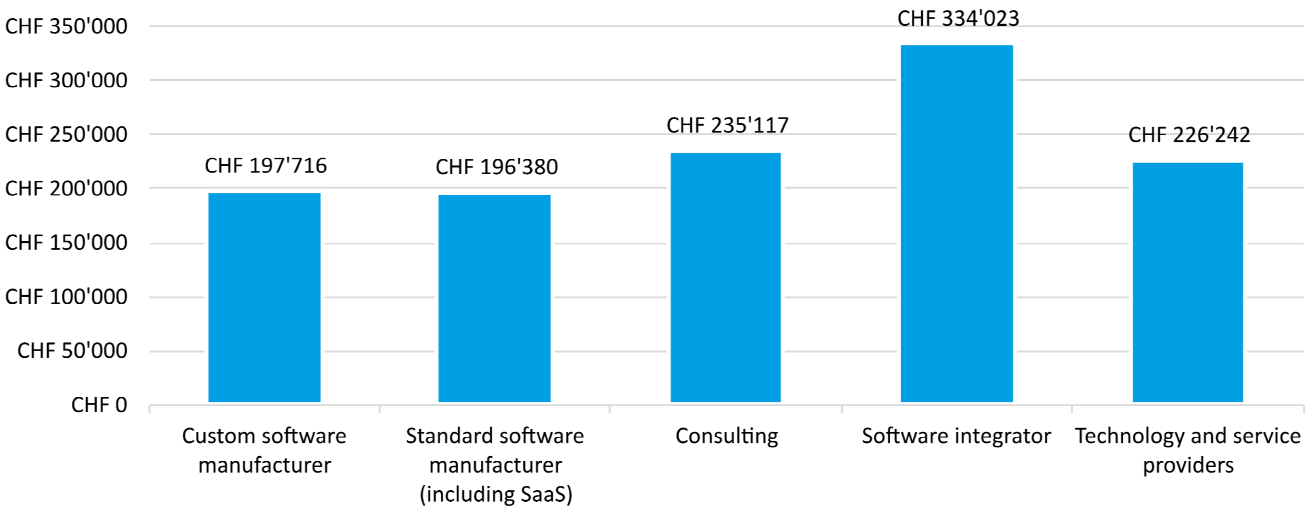
Custom and Standard Software Manufactures Employ Majority of Employees

Looking at employee distribution (see Figure 7), standard software manufacturers employ 36.9% of software workers. Custom software manufacturers follow with 28.5%, and consulting with 20.9%.

Figure 8 shows the average revenue per employee. In this category, software integrators rise to the top with 334 kCHF. Consulting (235 kCHF) and technology and service providers (226 kCHF) follow at some distance. Manufacturers of custom (197 kCHF) and standard (196 kCHF) software make the lowest revenue per employee.

Revenue per Employee

Figure 8: Average revenue per employee

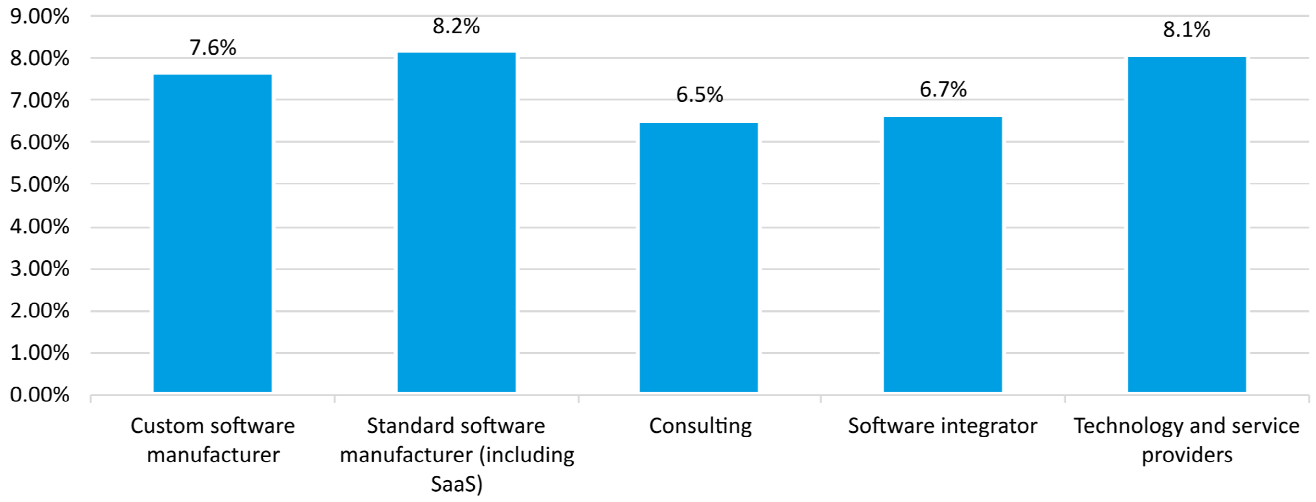


Source: SSIS 2016

N = 183

EBIT Margins in the Swiss Software Industry

Figure 9: EBIT margins by subindustries



Source: SSIS 2016

N = 153

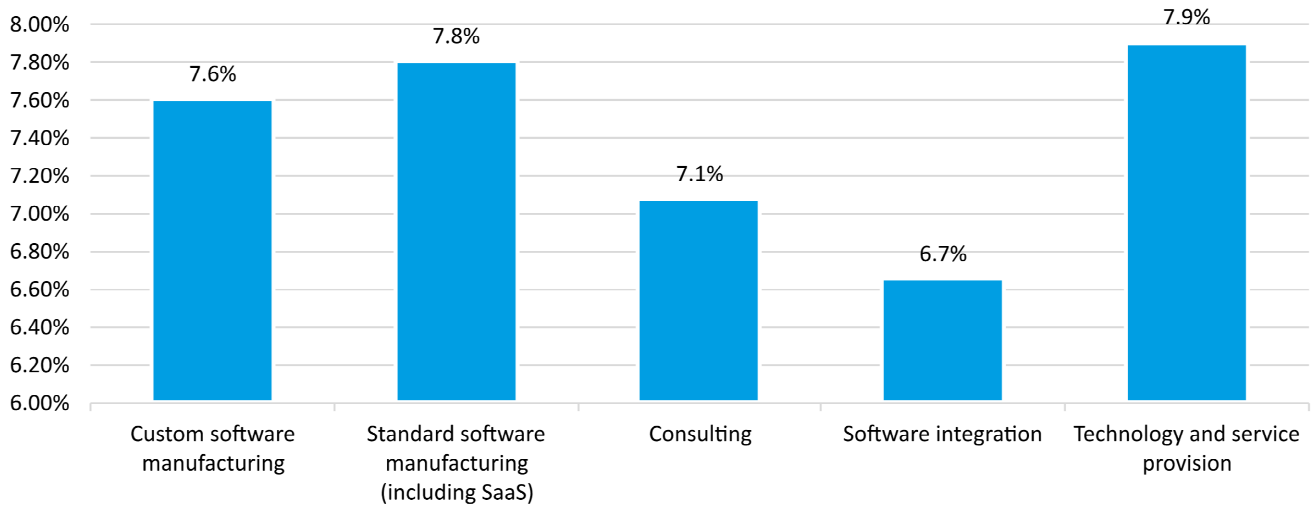
Robust Profitability

The Swiss software industry still shows a robust profitability (see Figures 9 and 10). The EBIT (Earnings before interest and taxes) margin—an established measure of profitability—averaged 7.4% in 2015. Yet, this margin is slightly lower than 2014's 8.5%.

Within the software industry, standard software manufacturers and technology and service providers are the most profitable branches (>8%). Custom software manufacturers follow with 7.6%. Consulting companies—which were the most profitable in 2014—and software integrators are at the bottom of the profitability ranking.

EBIT Margins per Activity

Figure 10: EBIT margins per activity

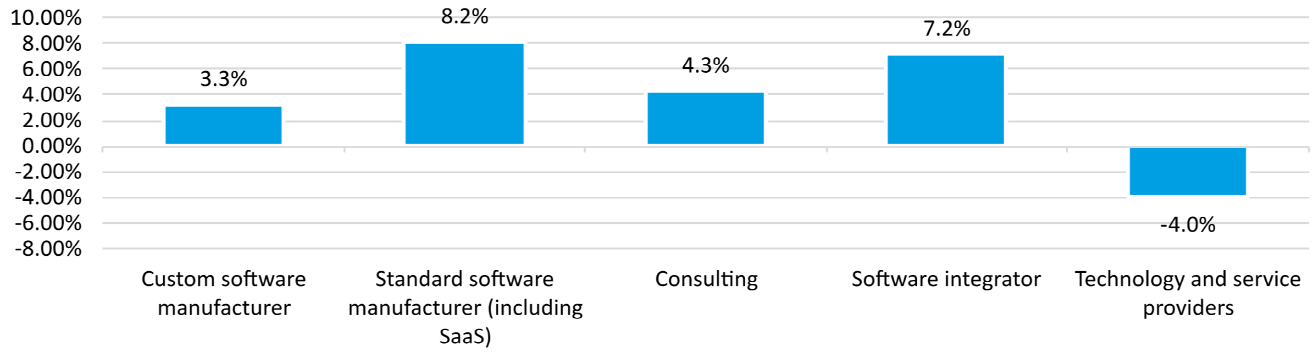


Source: SSIS 2016

N = 153

Expected Growth in Revenue

Figure 11: Expected year over year revenue growth



Source: SSIS 2016

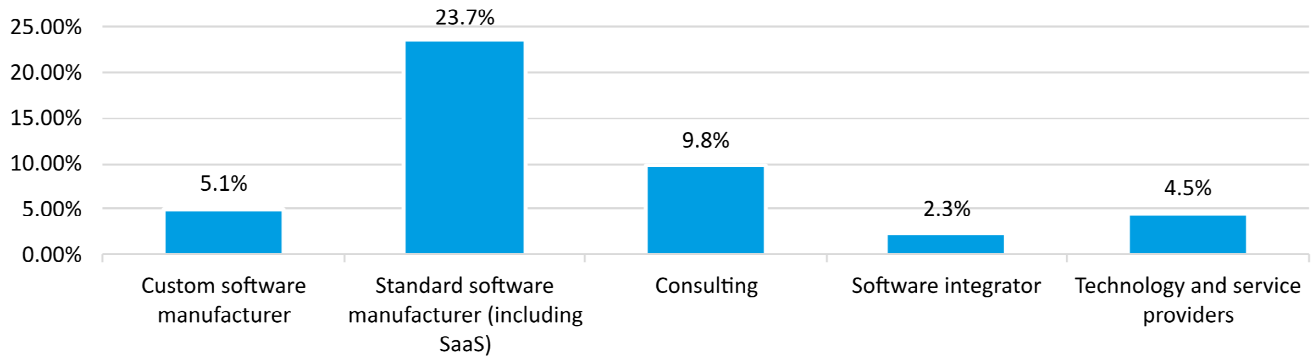
N = 192

Steady but Decelerated Growth Prospects

The Swiss software industry is still expecting revenue to grow but the growth expectations are more cloudy than last year. The average expected rate of revenue growth is 4.9% compared to 11.8% the year before. Standard software manufacturers rise the pinnacle with an expected increase of more than 8.2%, followed by software integrators with 7.2%. Consulting companies expect to grow at 4.3%, custom software manufacturers at 3.3%. Technology and service providers expect their business to shrink by 4%. This less optimistic outlook on the future is also reflected in the expenses in R&D (see Figure 12).

R&D Investments

Figure 12: R&D investments in 2015 as percentage of revenue



Source: SSIS 2016

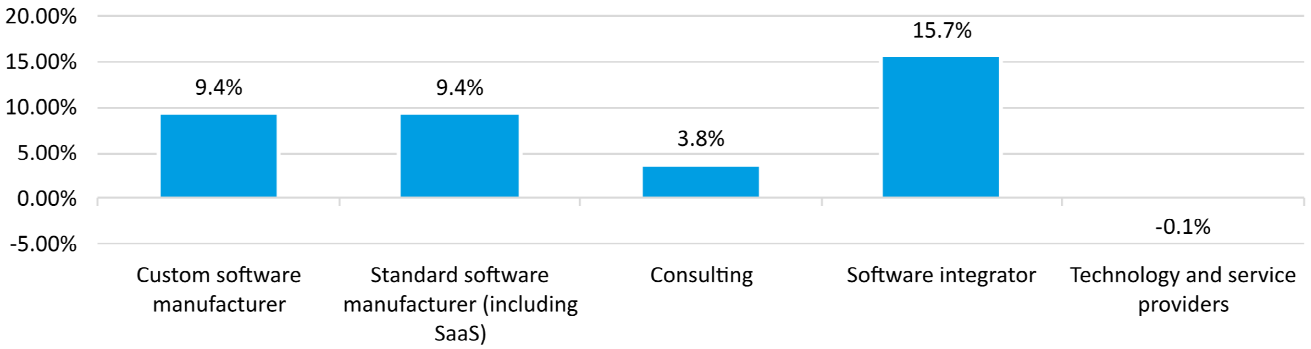
N = 177

High but Lower R&D Investments

The Swiss software industry still heavily invests into its future: Expenses for R&D are on average 11.8% of the revenue—but the number is down from last year's 14.1%. Manufacturers of standard software lead the field with 23.7% of their revenue invested into R&D. Consulting companies plan to invest 9.8% into R&D, custom software manufacturers and technology and service providers around 5%, and software integrators 2.3%. Notably, compared to last year custom software manufacturers plan to cut expenses for R&D by more than 50% (down from 13% last year).

Employee Growth Prospects

Figure 13: Expected year over year growth of workforce



Source: SSIS 2016

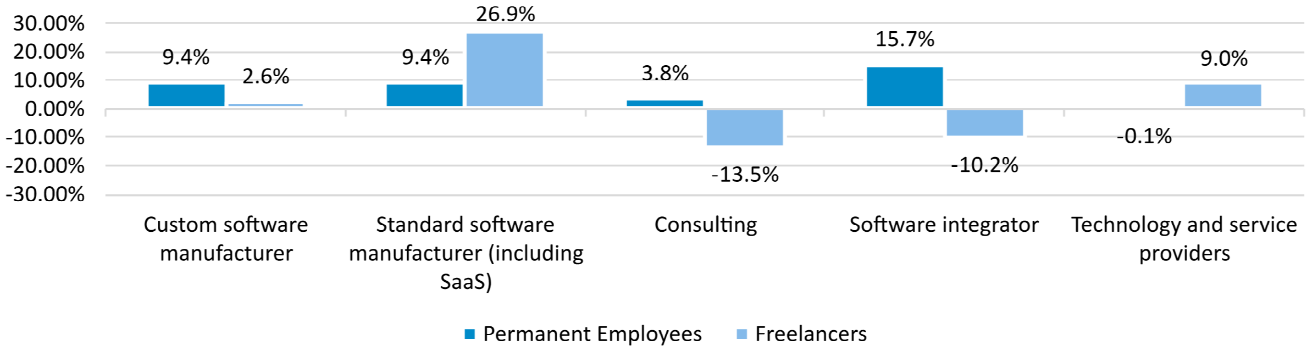
N = 261

More Software Workers Overall

The Swiss software industry tries to achieve its growth goals by increasing its workforce (see Figure 13). The total number of employees is expected to grow at a rate of 8.3%. Software integrators expect the highest growth rate (15.7%), followed by custom and standard software manufacturers (both 9.4%). Consultancies—last year's growth leader—expect their workforce to grow only by 3.8%, the workforce of technology and service providers is even expected to stagnate. Similar to last year, the growth in workforce for software integrators is considerably higher than the expected growth in revenue.

Employee Growth Prospects

Figure 14: Expected year over year growth - permanent employees vs. freelancers



Source: SSIS 2016

N = 261

A Slight Shift from Freelancers to Permanent Employment

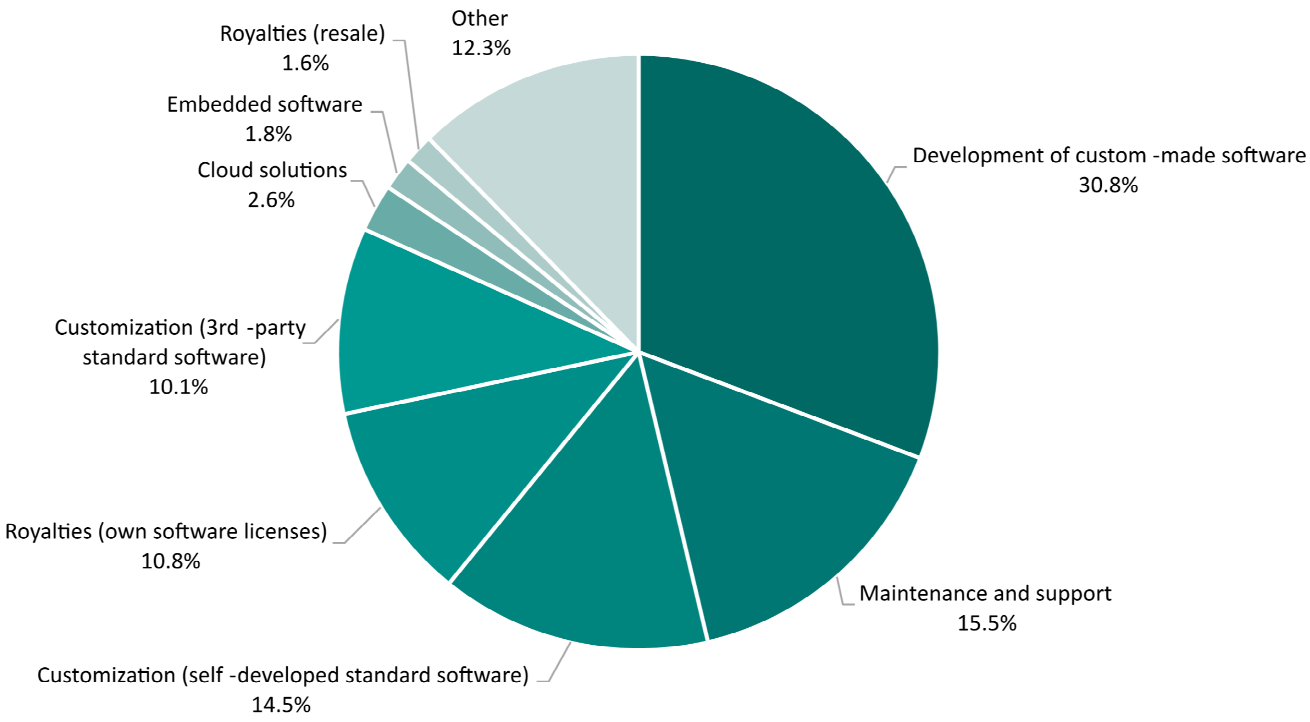
Both the number of permanent employees and freelancers are expected to grow. But this year the number of permanent employees is expected to grow faster (8.3%) than the number of freelancers (6.9%). This difference in growth rates is even more visible when looking at the subindustries. With the notable exception of standard software manufacturers and technology and service providers, all subindustries plan to grow permanent employees much faster than freelancers (see Figure 14). This stands in stark contrast to last year when freelancers grew much faster than permanent employees (17% vs. 12%).

Spotlight on

Sources of Revenue

Sources of Revenue

Figure 15: Revenue from different revenue sources as percentage of industry revenue



Source: SSIS 2016

N = 192

Among the participants,

30.8%

develop custom software

Main Source of Revenue: Professional Services

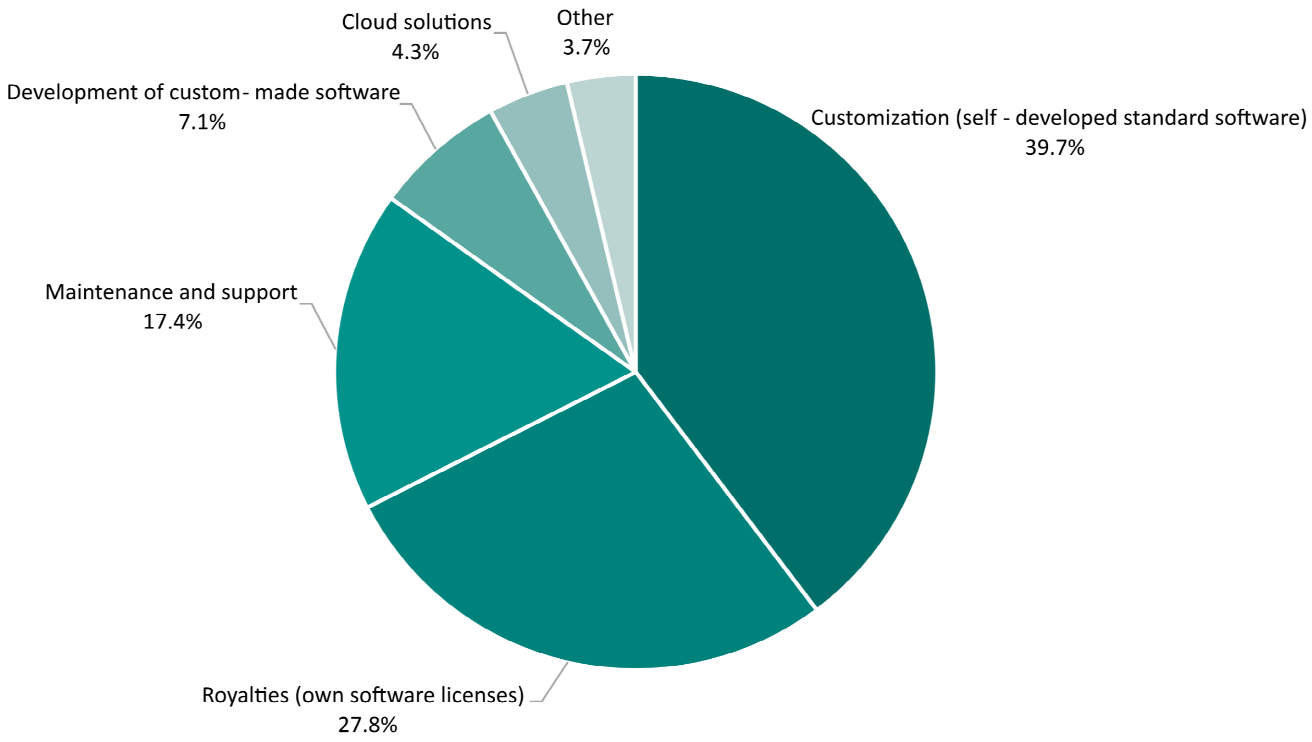
We asked each surveyed company about the sources of their revenue. The development of custom-made software accounts for 30.8% of the industry revenue, customization of standard and custom software for 24.6%, and maintenance and support for 15.5%. Despite the current transformation of the software industry towards SaaS-based delivery models, less than 3% of the revenue comes from SaaS, whereas traditional software royalties still account for 10.8% (see Figure 15).

If you split the sample by manufacturers of custom vs. standard software, the sources of revenue change dramatically. For manufacturers of standard software, customization is the largest stream of revenue (39.7%) —even leading royalties (27.8%), and maintenance and support (17.4%). The development of custom-made software and SaaS accounts for around 6% of the revenue of standard software manufacturers (see Figure 16).

Custom software manufacturers make 60.7% of their revenue with the development of tailor-made software. Maintenance and support (12.7%), customization (9.7%), and royalties (8.2%) follow at some distance (see Figure 17).

Sources of Revenue for Manufacturers of Standard Software

Figure 16: Revenue from different revenue sources as percentage of standard software manufacturer revenue

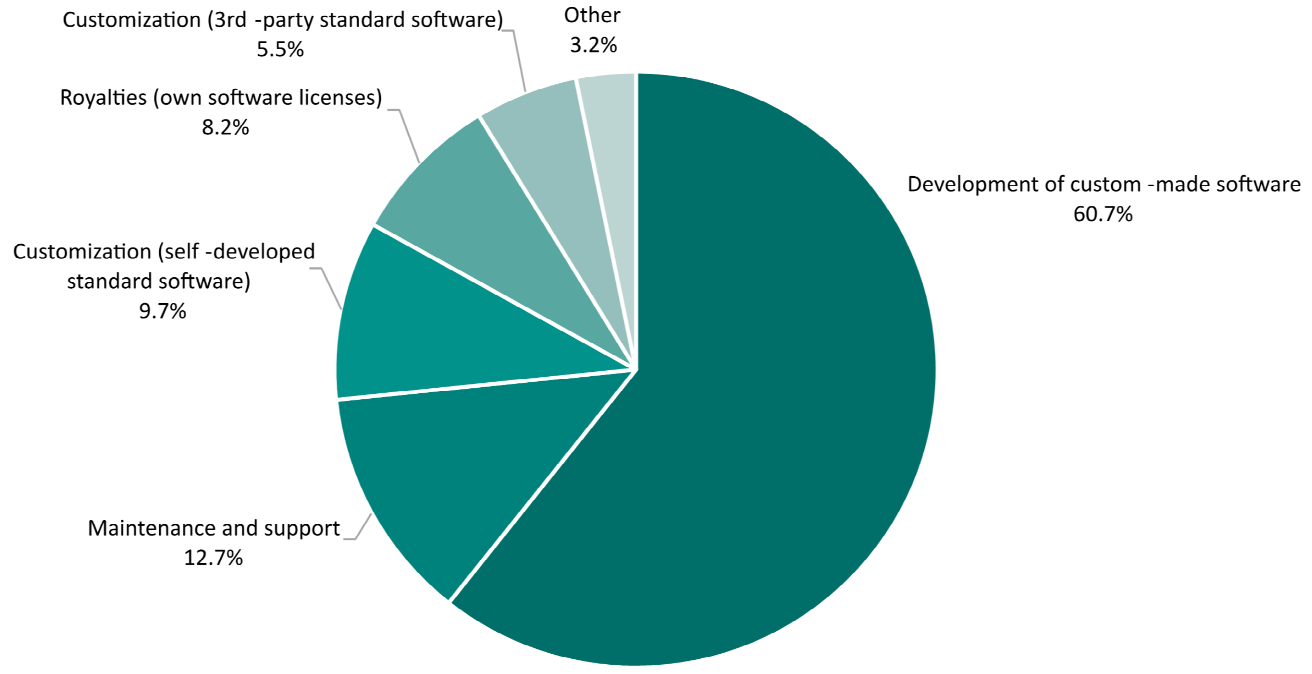


Source: SSIS 2016

N = 64

Sources of Revenue for Manufacturers of Custom Software

Figure 17: Revenue from different revenue sources as percentage of custom software manufacturer revenue



Source: SSIS 2016

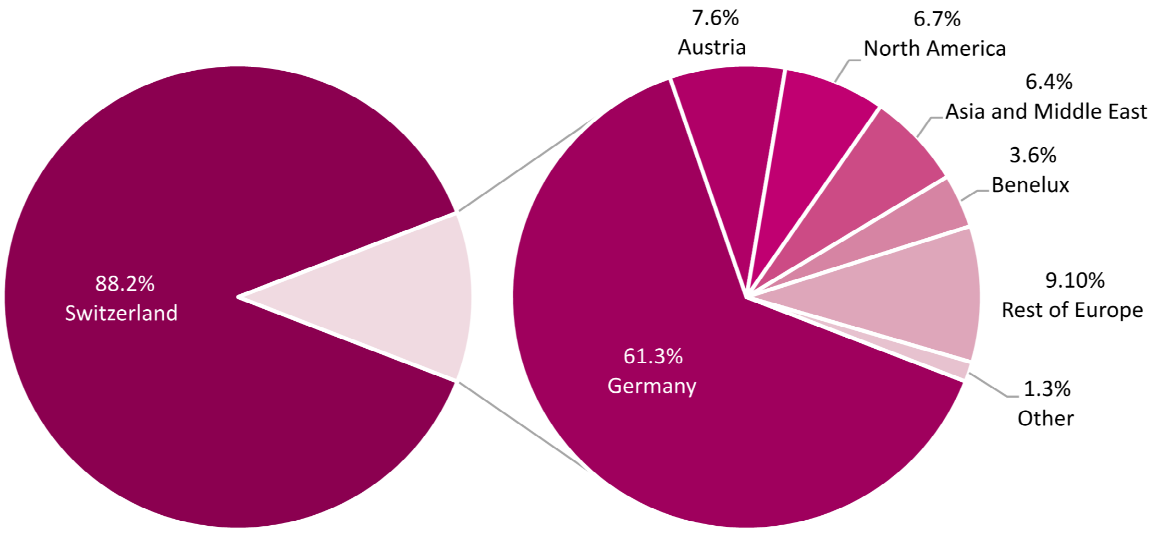
N = 70

Spotlight on

Internationalization

Degree of Internationalization and Target Markets

Figure 18: Distribution of international revenue



Source: SSIS 2016

N = 192

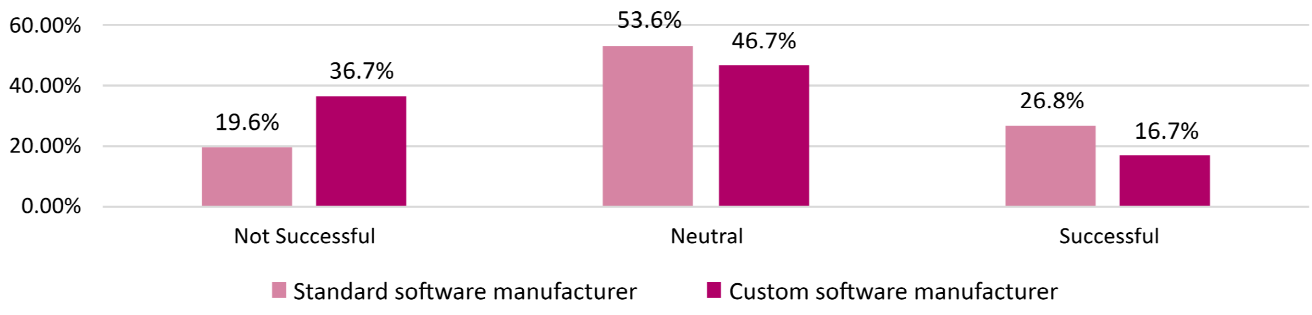
The Low Internationalization of Swiss Software Companies

Only 11.8% of the revenue of the Swiss software industry comes from countries other than Switzerland—this is an even lower proportion than last year's 16%. 61.3% of that revenue comes from a single country - Germany. Thus, the dependency from Germany as export market has even increased compared to last year's 49%. Austria (7.6%), North America (6.7%), and Asia and Middle East (6.4%) follow at great distance. The rest of the world accounts for 18% of the exports (see Figure 18).

If you split the sample between manufacturers of standard software and manufacturers of custom software the picture only changes slightly. The geographic diversity of exports remains low. However, standard software manufacturers evaluate their internationalization generally much more favorably (26.8% as successful, 19.6% as not successful) than custom software manufacturers (16.7% successful, 36.7% unsuccessful) (see Figure 19). To better understand these differences, we dive deeper into what drives internationalization endeavors, and how Swiss software companies enter international markets.

Success of Internationalization Endeavors

Figure 19: Percentage of Standard vs. Custom Software Manufacturers who evaluate internationalization as…



Source: SSIS 2016

N = 86

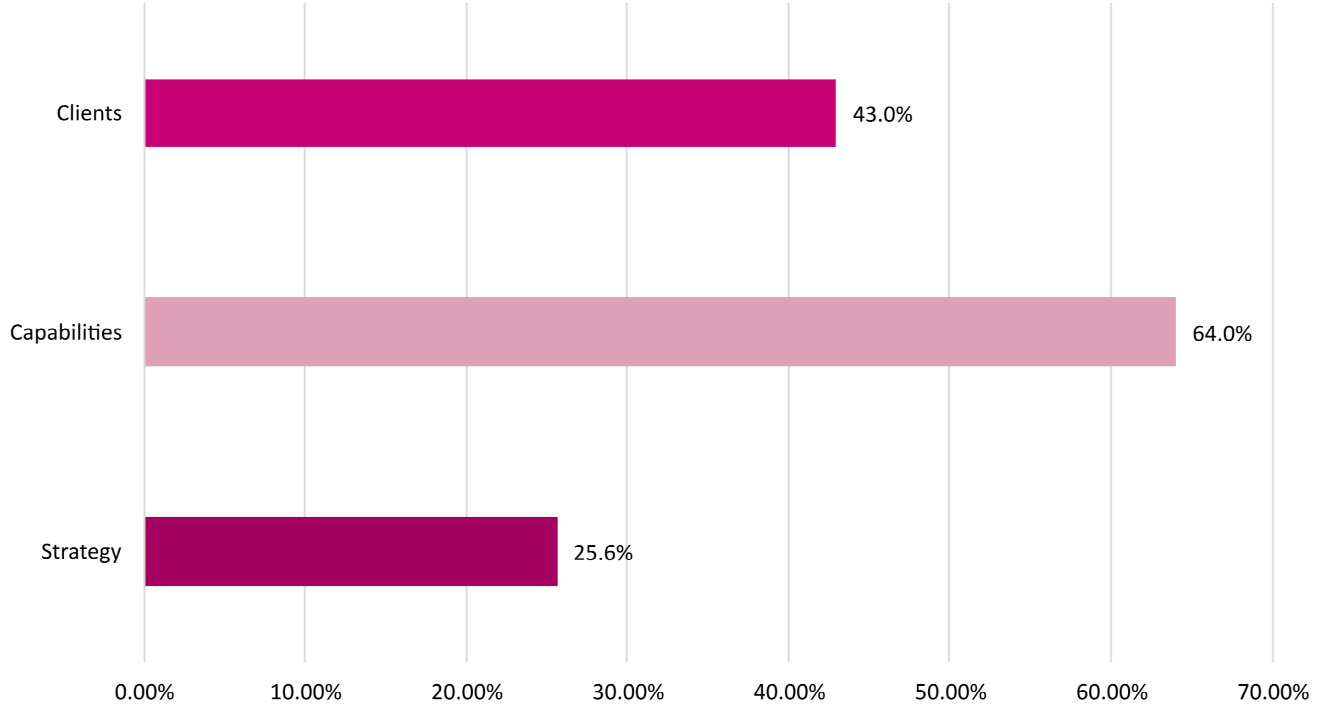
Drivers of Internationalization

We also looked at the reasons behind internationalization endeavors, i.e., the drivers of internationalization on a firm-level. Three generic drivers of internationalization were distinguished: Strategy, Capabilities, and Clients (see Infobox below for details) .

By far the most important driver of internationalization are „Capabilities“. “Clients” follow with 42%. Only 25% of companies stated that their internationalization was driven by strategic considerations (see Figure 20). Thus, most internationalization endeavors follow existing capabilities and existing clients rather than deliberate decisions about where software companies want to go.

Drivers of Internationalization

Figure 20: Percentage of software companies which agree that their internationalization was mainly driven by …



Source: SSIS 2016

N = 114

Infobox: Three Firm-Level Drivers of Internationalization

Strategy

Expansion into foreign markets is driven by an explicitly defined internationalization strategy. In other words, the decision is based on the question: Where do I want to go?

Capabilities

Expansion into foreign markets is driven by the company’s existing operation capabilities. In other words, the decision is based on the question: What can I do?

Clients

Expansion is driven by its existing client relationship. In other words, the decision is based on the question: With whom should I go?

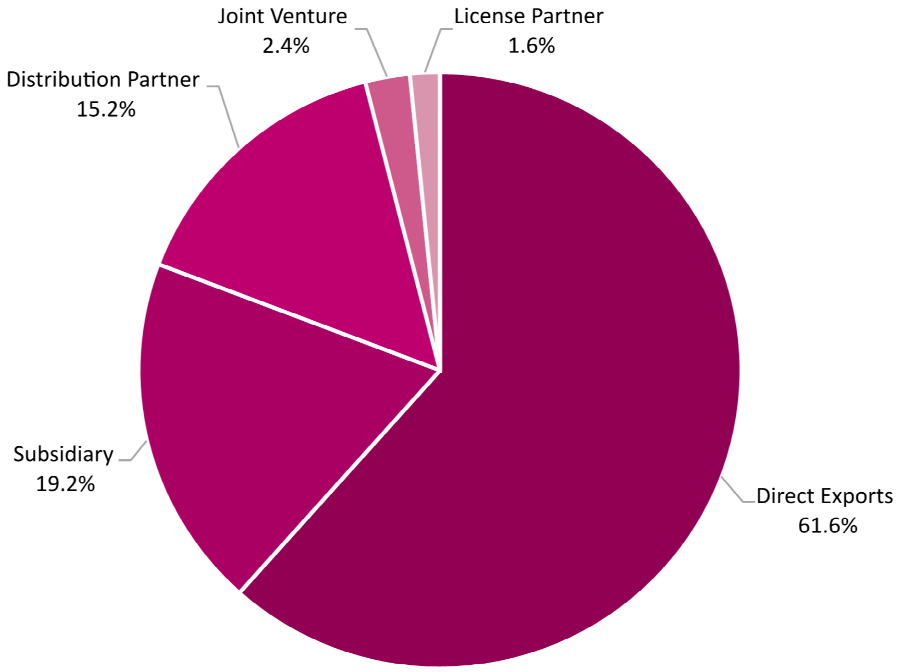
Five Entry Modes into Foreign Markets

Expansion into foreign markets can be achieved via five different entry modes:

- Direct exports: Marketing and directing sales of software goods and services produced in Switzerland in another country.
- Subsidiary: Direct ownership of a foreign entity that processes and sells software goods and services in the foreign country.
- Distribution partner: A company in the foreign country is permitted to use and sell the software goods of the licensor.
- Joint venture: A partnership with a local business is used to enter a foreign market.
- License partner: An international license partnership allows foreign firms to distribute or use licenses in the foreign market.

Entry Modes of Swiss Software Companies into Foreign Markets

Figure 21: Percentage of software companies which entered foreign markets through …



Source: SSIS 2016

N = 125

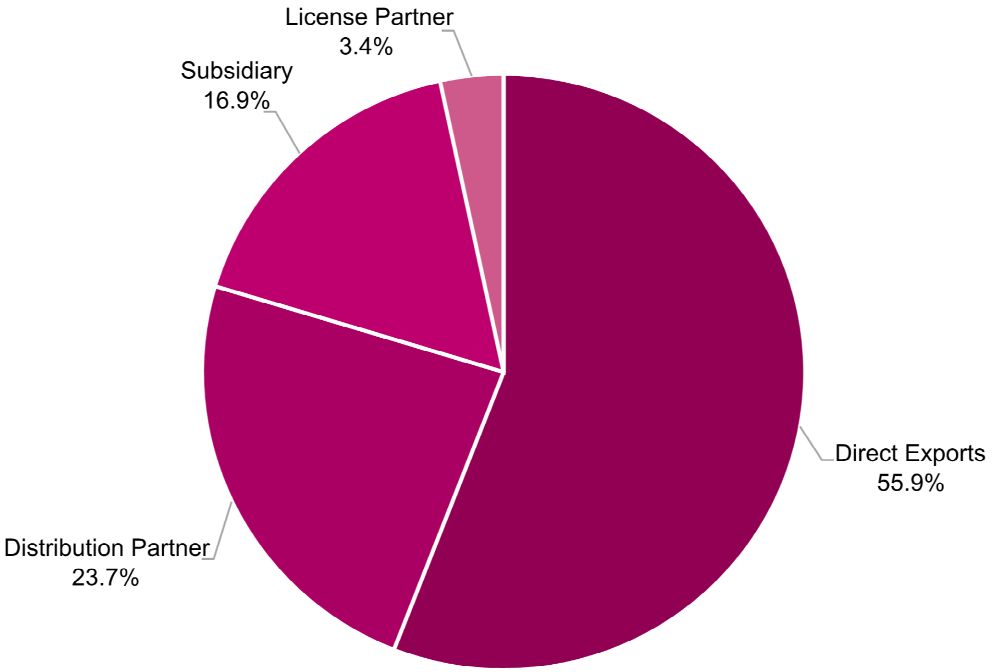
Market Entry via Foreign Direct Exports

The vast majority of Swiss software companies enters foreign markets via direct exports (61.6%). The entry modes of foreign subsidiaries (19.2%) and distribution partners (15.2%) follow at some distance (see Figure 21).

Yet, if the sample is split between manufacturers of custom and standard software, the picture changes (see Figures 22 and 23). Manufacturers of custom software rely even more on direct exports (71.9%), than manufacturers of standard software (55.9%). Therefore, standard software manufacturers rely more heavily on other entry modes such as distribution partners (23.7%) which imply a bigger footprint in the foreign market.

Entry Modes of Swiss Standard Software Manufacturers Into Foreign Markets

Figure 22: Percentage of standard software manufacturers which entered foreign markets through …

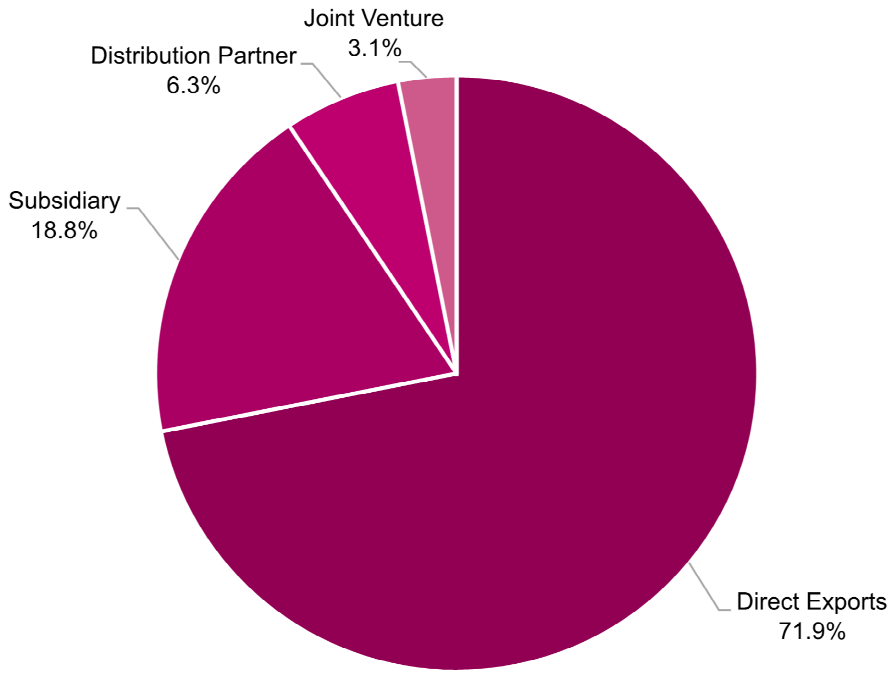


Source: SSIS 2016

N = 32

Entry Modes of Swiss Custom Software Manufacturers Into Foreign Markets

Figure 23: Percentage of custom software manufacturers which entered foreign markets through …

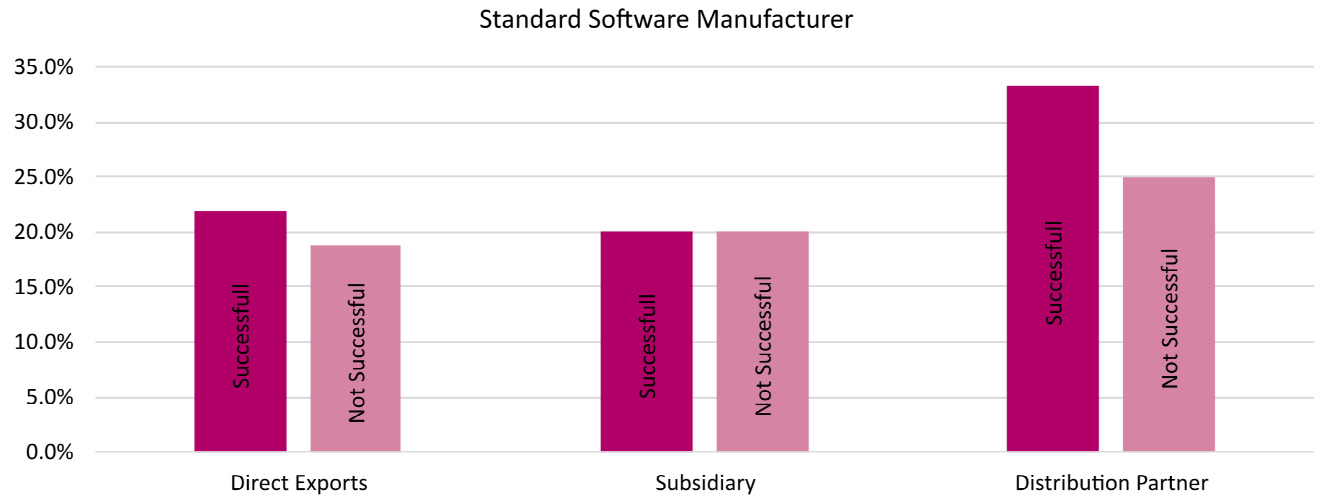


Source: SSIS 2016

N = 59

Entry Mode Success of Swiss Standard Software Manufacturers

Figure 24: Percentage of standard software companies which claim that the selected entry mode was…



Source: SSIS 2016

N = 153

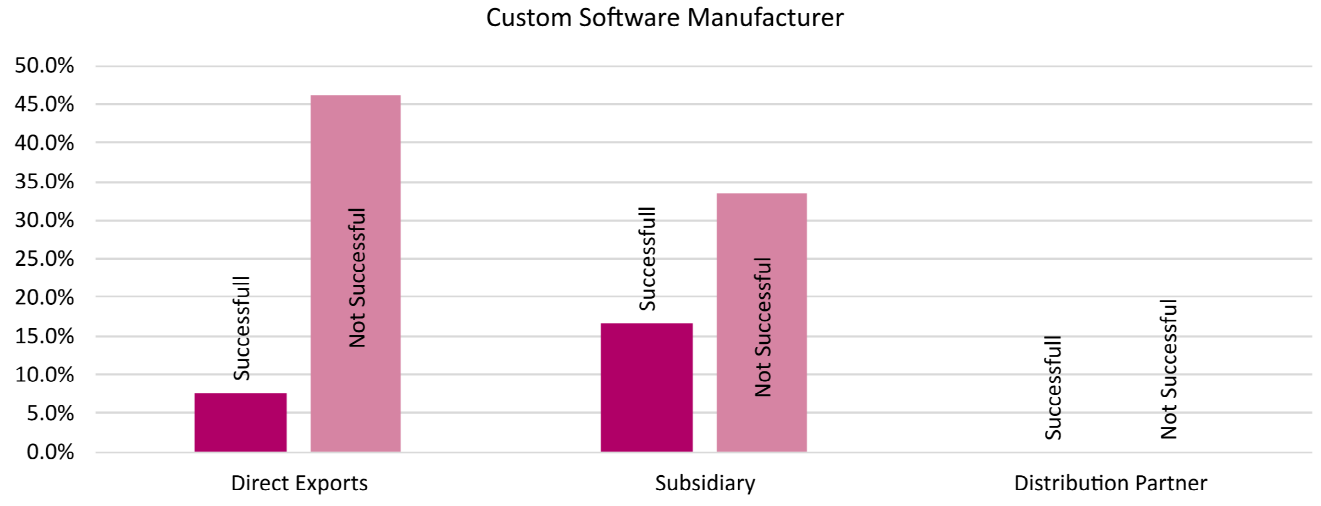
Success of Entry Modes

Interestingly, despite being the default entry mode, the success of direct exports are seen rather critical: Only 16.2% of direct exports are seen as successful, 27% as unsuccessful (see Figure 26). The other two main entry modes are seen more favorably: 33.3% of market entries through a foreign subsidiary are seen as successful, and even more for distribution partnerships (41.2%).

This overarching picture manifests even more clearly when the sample is split by custom vs. standard software manufacturers (see Figures 24 and 25). These figures show that custom software manufacturers not only rely more heavily on the generally critically seen direct exports, they also see them more critically.

Entry Modes Success of Swiss Custom Software Manufacturers

Figure 25: Percentage of custom software companies which claim that the selected entry mode was…

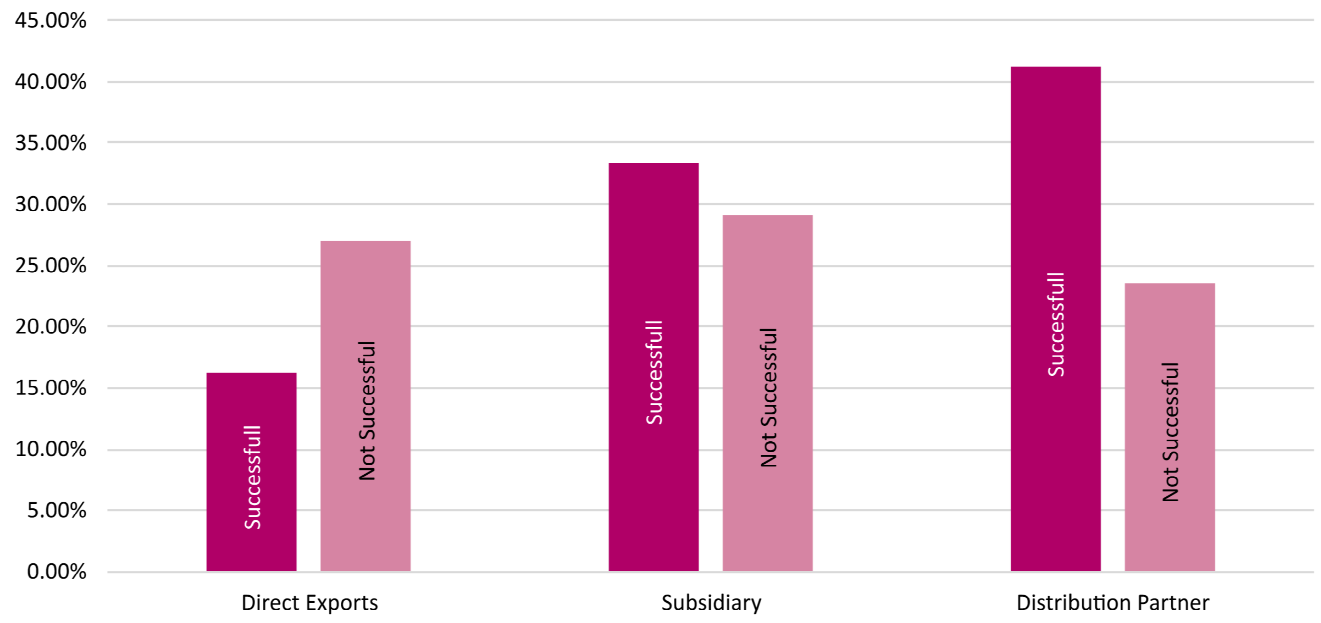


Source: SSIS 2016

N = 153

Entry Mode Success

Figure 26: Percentage of software companies which claim that the selected entry mode was…



Source: SSIS 2016

N = 115

Among software firms,

distribution partnerships

are considered the most successful internationalization strategy

Concluding Remarks on Internationalization

We started this analysis of the drivers of internationalization and entry modes with the observation that generally Swiss software companies are not particularly satisfied with their internationalization endeavors, but that standard software manufacturers evaluate their internationalization endeavors much more favorably than custom software manufacturers.

The findings suggest that the generally low levels of satisfaction might be rooted in the non-strategic approach to internationalization that many Swiss software companies take.

Moreover, our findings suggest that standard software manufacturers might be more satisfied with their internationalization endeavors because they enter markets less often through direct exports—which are considered problematic by our participants—and more often through other modes such as distribution partners—which are considered more favorably by our participants. In addition, internationalization of custom software manufacturers may be generally more limited by high labor costs than standard software manufacturers. This is because standard software is more scalable, i.e., once it is developed it can be offered in many countries without substantial additional costs.