SSIS
Swiss Software Industry Survey

UNIVERSITÄT
BERN

THOMAS HURNI AND JENS DIBBERN
WITH SUPPORT FROM CORINNA RUTSCHI, SIMON PERRELET, AND LOUIS FELDER

Institute of Information Systems - Information Engineering

October 2021

Swiss Software Industry Survey 2021

Current State, Emerging Trends, and Long-term developments

A Study of the University of Bern on behalf of SWICO

Principal:

Swico - der Wirtschaftsverband für die digitale Schweiz
Lagerstrasse 33
CH - 8004 Zürich

Operational partners:

Dr. Pascal Sieber & Partners AG
Institut für Wirtschaftsstudien Basel
Tran Engineering

Advertising partners:

Alp ICT
inside-it.ch
topsoft

Authors:

Dr. Thomas Hurni
Prof. Dr. Jens Dibbern
University of Bern
Institute of Information Systems
Department of Information Engineering
Engehaldenstrasse 8
CH - 3012 Bern
www.iwi.unibe.ch

Support:

Corinna Rutschi
Simon Perrelet
Louis Felder

Picture Credits:

Cover: UniBE; 6: Pixabay; 12: Pixabay; 18: Pixabay; 22: Pixabay

Bern, October 2021

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.

Dr. Thomas Hurni

Prof. Dr. Jens Dibbern

Corinna Rutschi

Simon Perrelet

Preface

COVID19 continues to affect large parts of our professional and private lives. The seventh edition of the Swiss Software Industry Survey (SSIS) takes this as an opportunity to look at the topic of resilience within the Swiss software industry. Specifically, this year's SSIS aimed to uncover how well domestic software companies were prepared for this shock, what impact it had on their busiesses, and what lessons they have already learned. However, this SSIS Report 2021 does not focus exclusively on resilience. Being the most comprehensive study of its kind in Switzerland, the report once again provides an in-depth overview of the current state, emerging trends, and long-term developments in the Swiss software industry.

This year, the SSIS was conducted for the first time under the patronage of Swico, the business association for digital Switzerland. Thanks to this patronage, the future of SSIS is secured for the coming years. Moreover, this patronage allows us to be as close as possible to the Swiss ICT industry. To this end, we would like to thank Swico for their trust in us and look forward to working with them in the years to come. As in prior years, we would also like to thank our partners sieber&partners, tranengineering, and the Institut für Wirtschaftsstudien Basel (IWSB) as critical supporters of the SSIS. On this occasion, we would also like to thank ICTsiwtzerland for their support in the past years.

To be as close as possible to the pulse of the Swiss software industry, we organized a virtual workshop in spring with executives and representatives of the Swiss software industry to gather their feedback and suggestions for the further development of the SSIS as well as for the definition of this year's special topic on resilience. In this regard, we would like to thank the Interest Group Software, Services, Consulting of Swico for their support.

We hope you enjoy reading this year's SSIS Report.

Yours sincerely,

Dr. Thomas Hurni

Prof. Dr. Jens Dibbern

Table of Contents

Executive Summary

The Swiss software industry remains optimistic about the prospects for the future, despite the COVID 19 pandemic: the industry expects a growth in revenue of 6.6 % in 2021. Somewhat more restrained are the expectations in terms of employment growth, with only 2.7% in 2021. For 2022, the Swiss software companies surveyed expect growth at the level of pre-COVID19 years. Looking back to 2020, the Swiss software companies report an increase in the EBIT margin to 8.2%, with a simultaneous decrease in the previous year's above-average revenue per employee to CHF 223,636.7. After a somewhat more successful year in 2019, the share of revenue generated abroad declined to 9.7%.

Even More Resilient in the Crisis Than Before

Swiss software companies consider themselves to be highly resilient, especially during the COVID19 pandemic. They also assume that they can easily keep up with international competitors in terms of technological advances. This confidence is reflected in the estimated minor negative impact of the COVID19 pandemic on revenue, profit, market share, and return on investment.

Informal Control Mechanisms Paid Off

A vast majority of employees in the Swiss software industry worked exclusively or at least predominantly from home during the COVID19 pandemic. In this context, those companies that placed more emphasis on individual and team responsibility in the sense of informal control mechanisms felt less adverse effects on revenue, profit, market share, and return on investment than those that placed more emphasis on formal control mechanisms such as behavioral or outcome control.

Flexible Working Models and No Downsizing of Office Space

Most of the surveyed companies intend to offer their employees even more flexible working models, especially in terms of working hours and location. To this end, the companies plan to invest even more in the personal equipment of their employees. Interestingly, these measures are not expected to lead to a reduction in office space.

Greater Employee Empowerment and Little Job Displacement

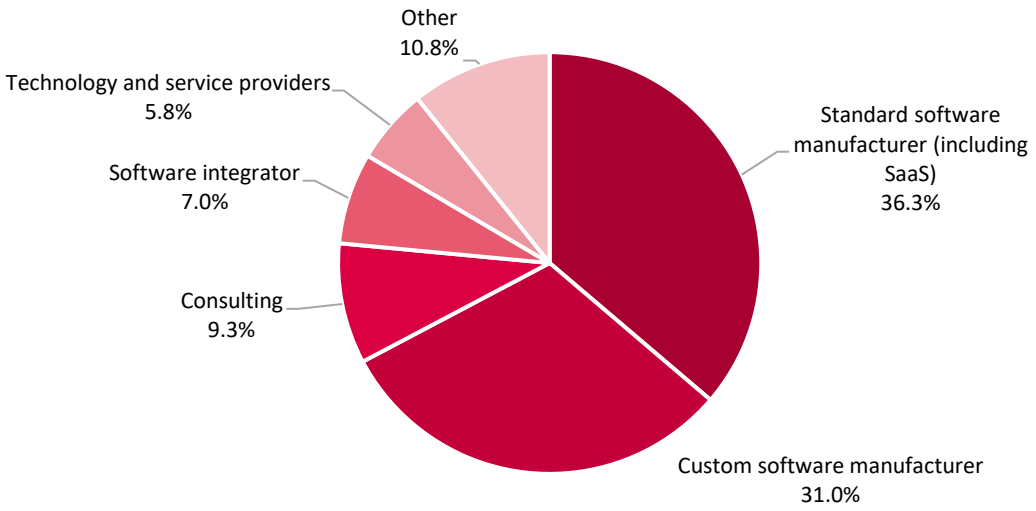
A considerable number of the surveyed companies intend to empower their employees even more in the future. At the same time, the majority of the Swiss software industry does not expect more jobs to be outsourced after the COVID19 pandemic.

Spotlight on

Revenue, Profitability & Future Growth

Distribution of Participating Companies

Figure 1: Number of companies per sub-industry as percentage of total responses



Source: SSIS 2021

N = 400

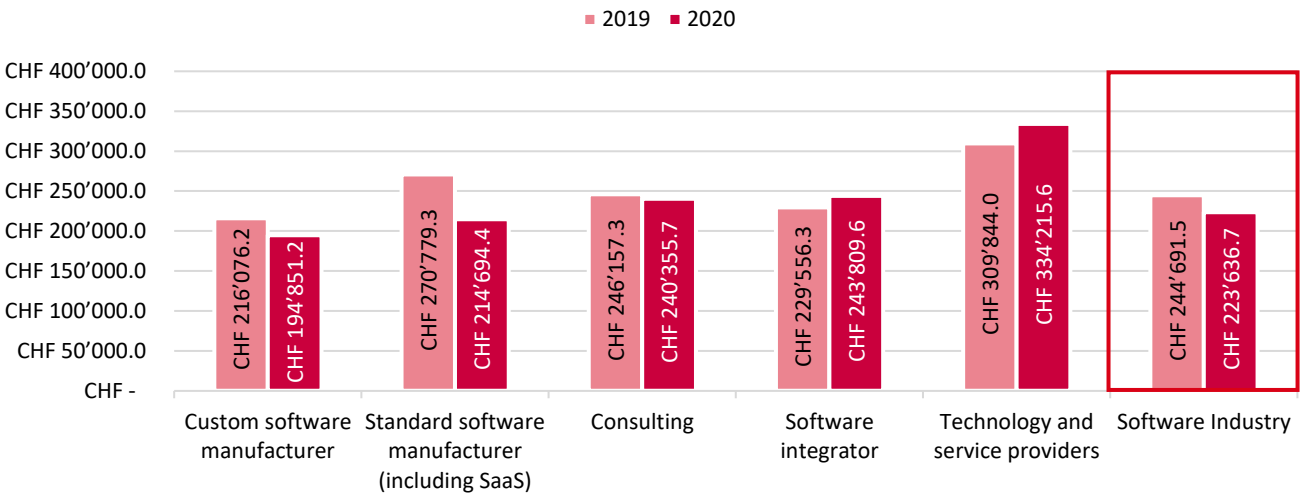
Decreasing Revenues per Employee

Figure 1 shows the distribution of participating companies. As in previous years, the manufacturers of custom software and standard software dominated our sample. Both sub-industries account for about one-third of the answers. Consulting companies (9.3%), software integrators (7.0%), and technology and service providers (5.8%) follow at some distance.

Figure 2 shows the revenue per employee in 2020 compared to 2019. Overall, revenue per employee in 2020 decreased to CHF 223,636.7 compared to CHF 244,691.5 in 2019. As in previous years, the manufacturers of custom software generated the lowest revenue per employee, followed by manufacturers of standard software, consulting firms, software integrators, and technology and service providers.

Revenue per Employee

Figure 2: Revenue per employee by sub-industries in 2019 and 2020

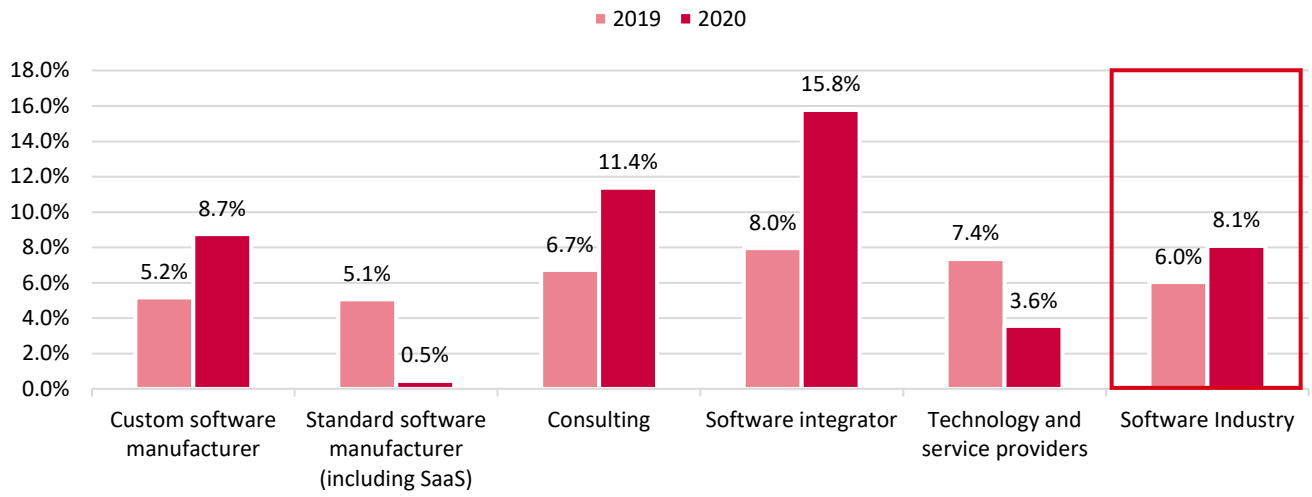


Source: SSIS 2021

N = 168

EBIT Margins in the Swiss Software Industry for 2019 and 2020

Figure 3: EBIT margins by sub-industries in 2019 and 2020



Source: SSIS 2021

N = 133

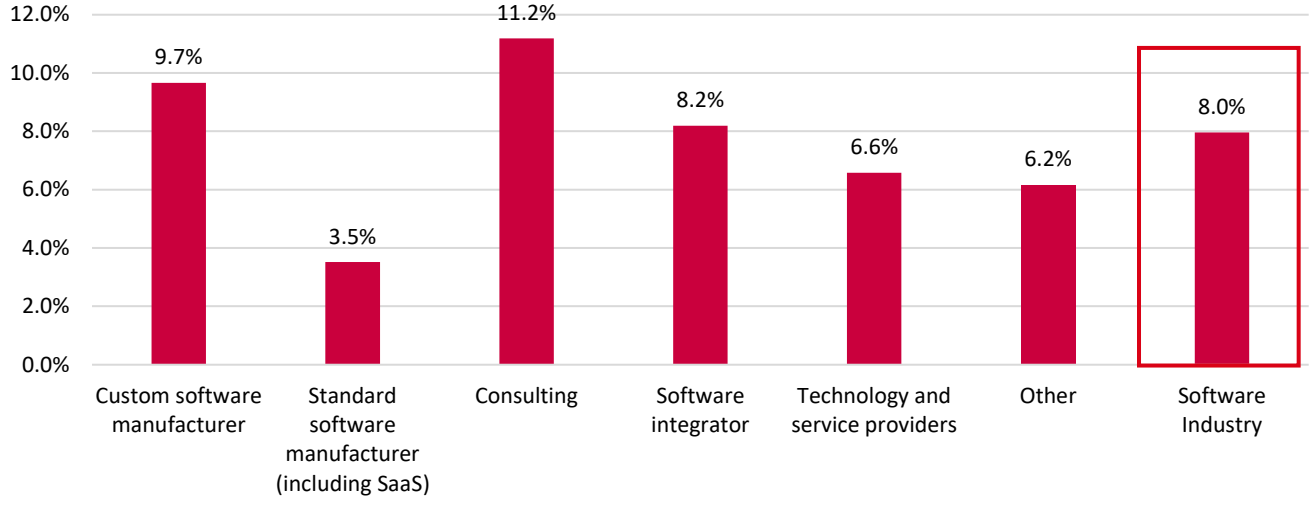
Higher EBIT Margins and First Insights Into EBITDA Margins

Figure 3 shows the EBIT margins of the sub-industries with an industry-wide increase from 6.0% in 2019 to 8.1% in 2020. This trend applies to custom software manufacturers (from 5.2% to 8.7%), consulting firms (from 6.7% to 11.4%), and software integrators (from 8.0% to 15.8%). The EBIT margins for standard software manufacturers (from 5.1% to 0.5%), and technology and service providers (from 7.4% to 3.6%) decreased.

Figure 4 shows the EBITDA margins of the Swiss software industry, which averaged 8.0% in 2020. The highest EBIDTA margin was achieved by consulting companies with 11.2%, the lowest by standard software manufacturers with 3.5%.

EBITDA Margins in the Swiss Software Industry for 2020

Figure 4: EBITDA margins by sub-industries in 2020

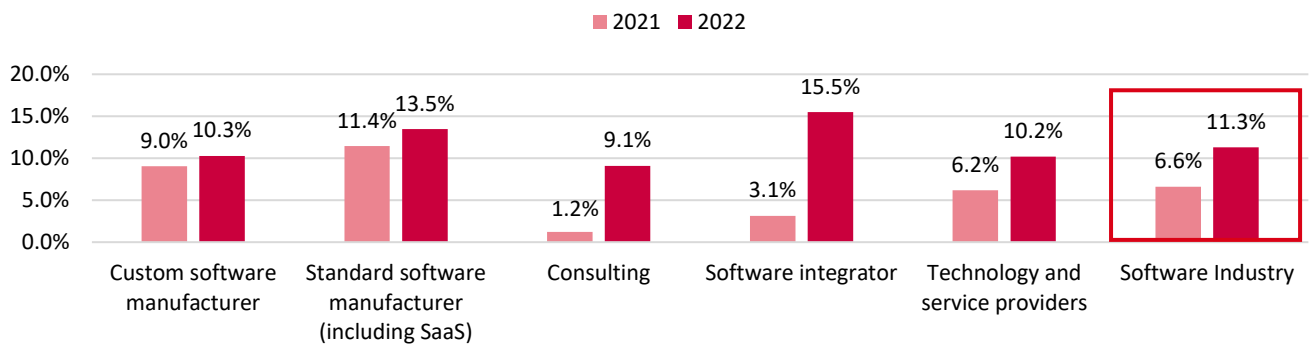


Source: SSIS 2021

N = 133

Expected Growth in Revenue

Figure 5: Expected year-over-year revenue growth by sub-industries for 2021 and 2022



Source: SSIS 2021

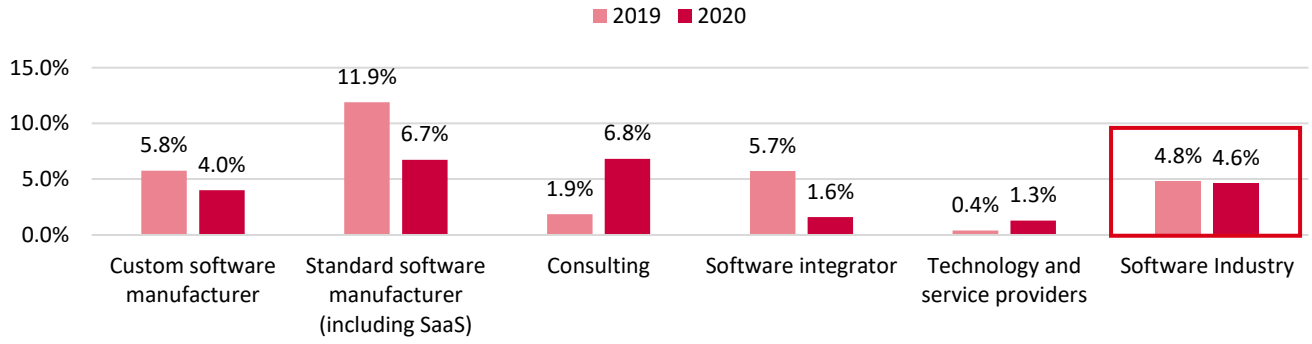
N = 146

Optimistic Revenue Growth Expectations for 2022

Figure 5 shows the expected growth in revenue of the Swiss software industry for the years 2021 and 2022. For 2021, the Swiss software industry expects growth in revenue of 6.6%, for 2022 of 11.3%. In 2021, custom software (9.0%) and standard software (11.4%) manufacturers expect the highest revenue growth, followed by technology and service providers (6.2%), software integrators (3.1%), and consulting companies (1.2%). In 2022, software integrators expect the highest growth (15.5%), followed by standard (13.5%) and custom software (10.3%) manufacturers, technology and service providers (10.2%), and consulting firms (9.1%).

Research and Development Investments

Figure 6: R&D investments by sub-industries in 2019 and 2020 as percentage of revenue



Source: SSIS 2021

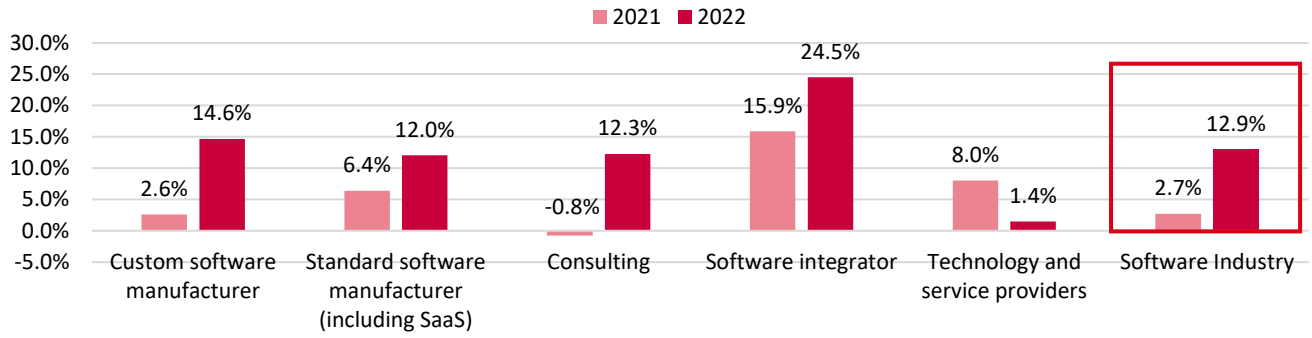
N = 136

Spending on Research and Development About The Same

Figure 6 shows the research and development (R&D) spending of Swiss software companies as a percentage of revenue in 2020 compared with 2019. Overall, Swiss software companies spent a lower proportion of their revenue (4.6%) on R&D in 2020 (4.6% in 2019). While consulting companies (6.8%) and technology and service providers (1.3%) increased their spending in 2020, all other subsectors reduced it. Standard software manufacturers reduced their R&D spending from 11.9% to 6.7%, custom software manufacturers from 5.8% to 4.0%, and software integrators from 5.7% to just 1.6%.

Employee Growth Prospects

Figure 7: Expected year over year growth of workforce by sub-industries for 2021 and 2022



Source: SSIS 2021

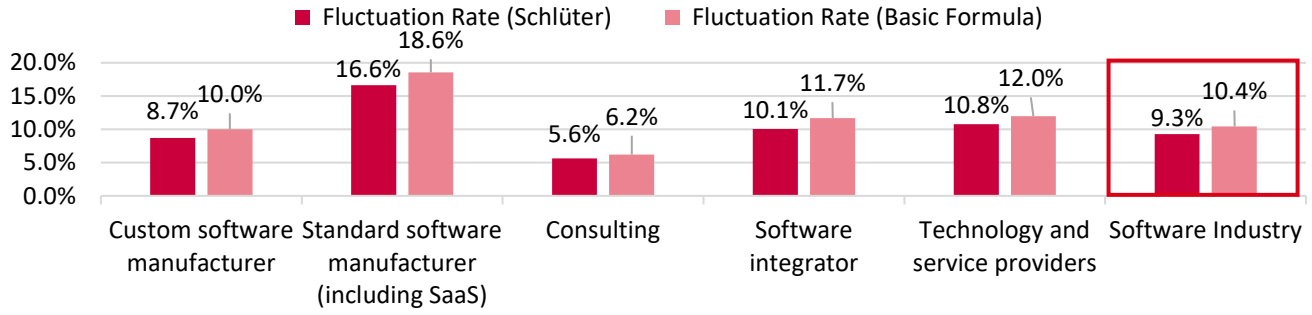
N = 168

Optimistic Employee Growth Prospects

Figure 7 shows the expected growth in the number of full-time equivalents (FTEs) in the Swiss software industry. For 2021, it expects an increase in the number of FTEs of 2.7% and for 2022 of 12.9%. Technology and service providers are planning to grow fewer FTEs in 2022 than in 2021 (from 8.0% to 1.4%). All other sub-industries plan an even more substantial increase in FTEs in 2022 than in 2021. In 2021, software integrators expect the most substantial growth at 15.9%, while consulting companies expect a slight decrease in their headcount of 0.8%. In 2022, the software integrators (24.5%) expect the most substantial increase.

Employee Fluctuation

Figure 8: Employee fluctuation using the Schlüter and Basic Formula



Source: SSIS 2021

N = 165

First Insights Into the Employee Fluctuation

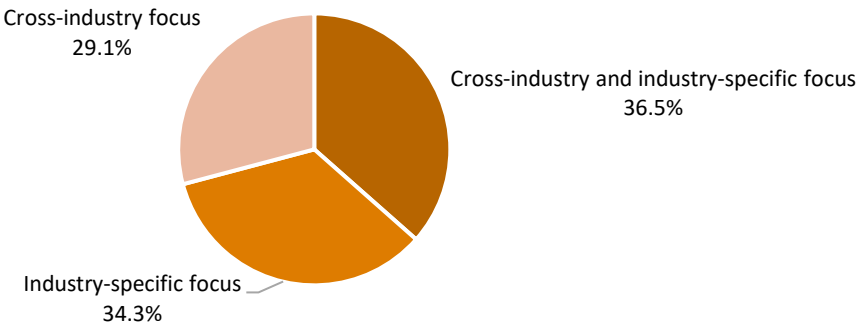
Figure 8 shows the employee fluctuation in the Swiss software industry in 2021 calculated employing the Schlüter formula [exits / (headcount at the beginning of a period + entries) * 100] and the Basic formula [(exits / headcount at the beginning of a period) * 10]. Based on both calculations, the standard software manufacturers experienced the highest fluctuation (16.6% or 18.6%), followed by the custom software manufacturers (8.7% or 10.0%), technology and service providers (10.8% or 12.0%), software integrators (10.1% or 11.7%), and consulting firms (5.6% or 6.2%). Overall, the Swiss software industry experienced a fluctuation of 9.3% (or 10.4%).

Spotlight on

Sources of Revenue

Industry Focus

Figure 9: Industry focus of Swiss software companies



Source: SSIS 2021

N = 230

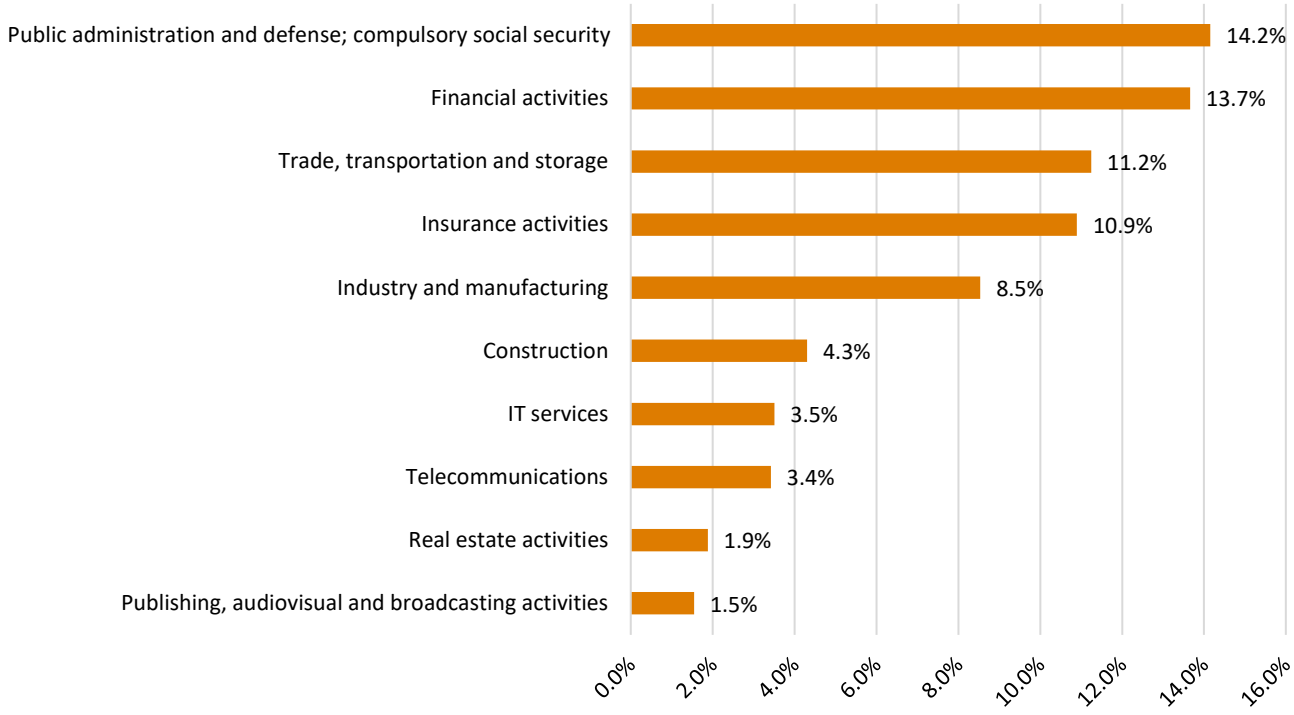
Most Important Industries for the Swiss Software Industry

Figure 9 illustrates whether Swiss software companies have an industry-specific focus (34.3%), a cross-industry focus (29.1%), or both an industry-specific and a cross-industry focus (36.5%). Thus, more than two-thirds of Swiss software companies focus on specific industries.

Figure 10 shows the most critical industries for Swiss software companies with an industry focus. The most important industries for these companies are the public administration, defense and compulsory social security industry (14.2%) and the financial industry (13.7%). Other important sectors for the Swiss software industry are the trade, transportation and storage industry (11.2%) and the insurance industry (10.9%). The remaining sectors each account for less than 10.0%.

Revenue per Industry

Figure 10: Most important industries for the Swiss software industry in terms of revenue (approximation)

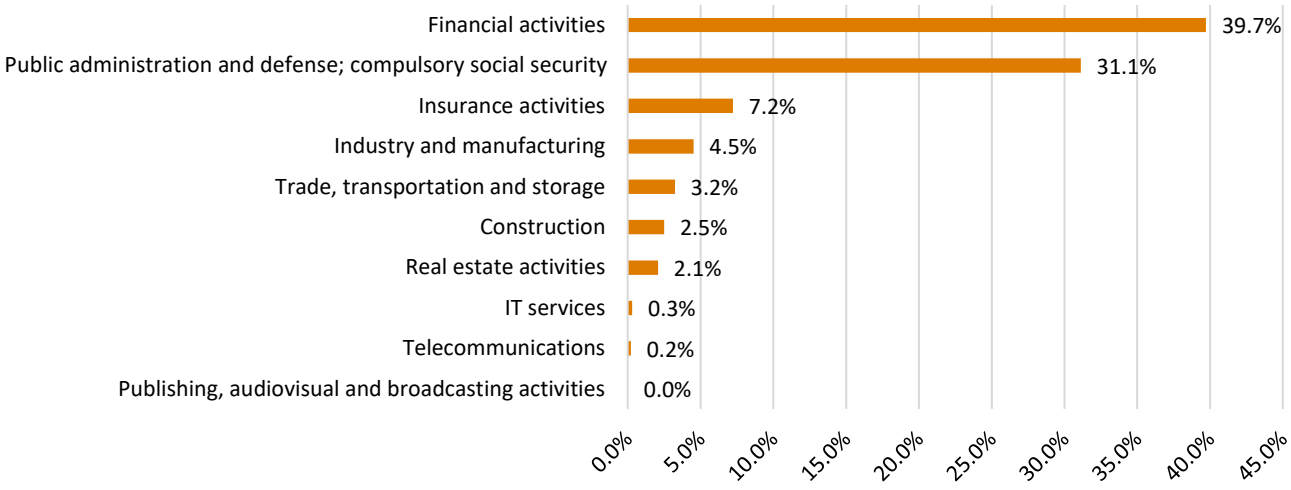


Source: SSIS 2021

N = 168

Revenue per Industry for Standard Software Manufacturers

Figure 11: Most important industries for the standard software manufacturers in terms of revenue (approximation)



Source: SSIS 2021

N = 39

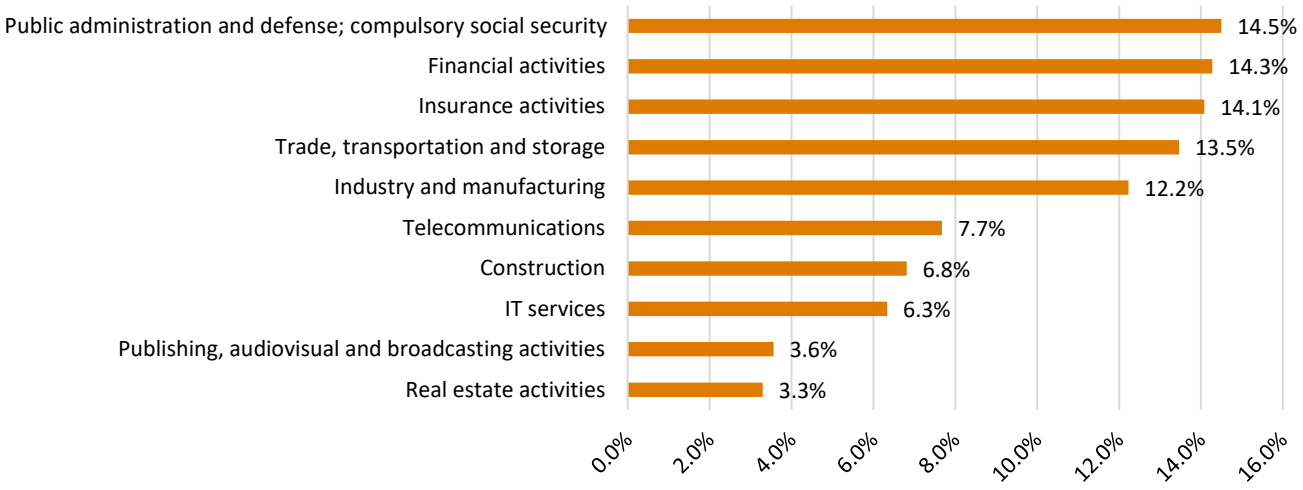
Revenue per Industry

For standard software manufacturers (see Figure 11), the financial and public sectors are the most critical industries. The intense focus on these two industries is reflected in the breakdown of revenues (39.7% and 31.1%, respectively). The other industries have significantly lower shares (less than 10.0%).

The public sector (14.5%) and the financial sector (14.3%) are also decisive for custom software manufacturers (see Figure 12). However, the insurance (14.1%), trade, transport and storage (13.5%), and industry and manufacturing (12.2%) sectors follow at a small distance.

Revenue per Industry for Custom Software Manufacturer

Figure 12: Most important industries for the custom software manufacturers in terms of revenue (approximation)

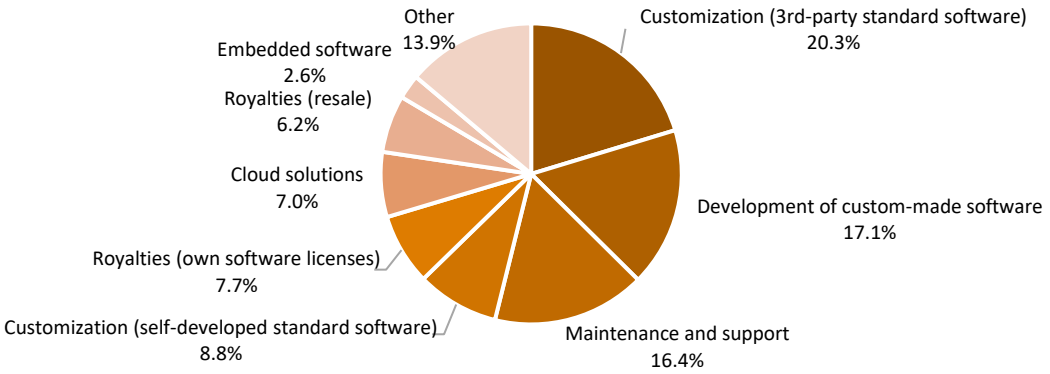


Source: SSIS 2021

N = 45

Sources of Revenue

Figure 13: Revenue sources of the Swiss software industry as a percentage of industry revenue



Source: SSIS 2021

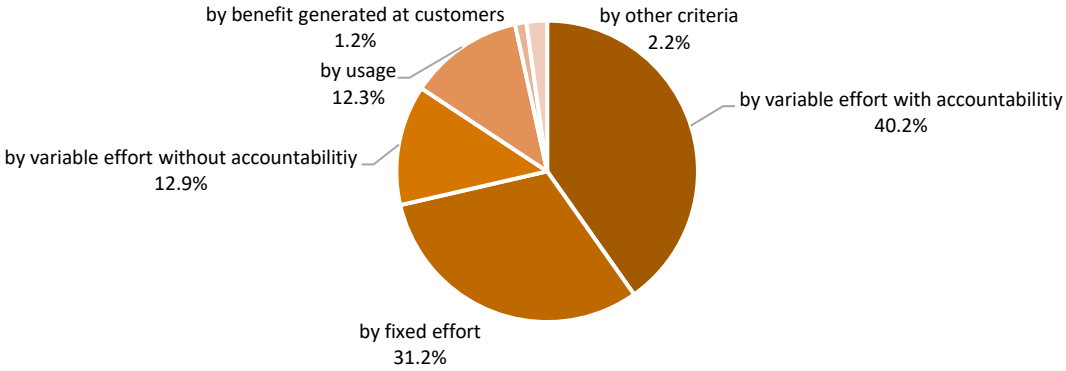
N = 168

Where the Swiss Software Industry Generates its Revenues

Figure 13 shows the sources of revenue for Swiss software companies. With a share of 20.3%, the customization of standard software from third-party providers accounts for the largest share, followed by the development of custom software (17.1%) and maintenance and support (16.4%). It is also evident that the Swiss software industry offers only a minimal range of scalable standard software and charges license fees for it (7.7%). Interestingly, revenues from cloud solutions (7.0%) have not increased in importance compared to the previous year.

Billing Models

Figure 14: Billing models of the Swiss software industry as a percentage of industry revenue



Source: SSIS 2021

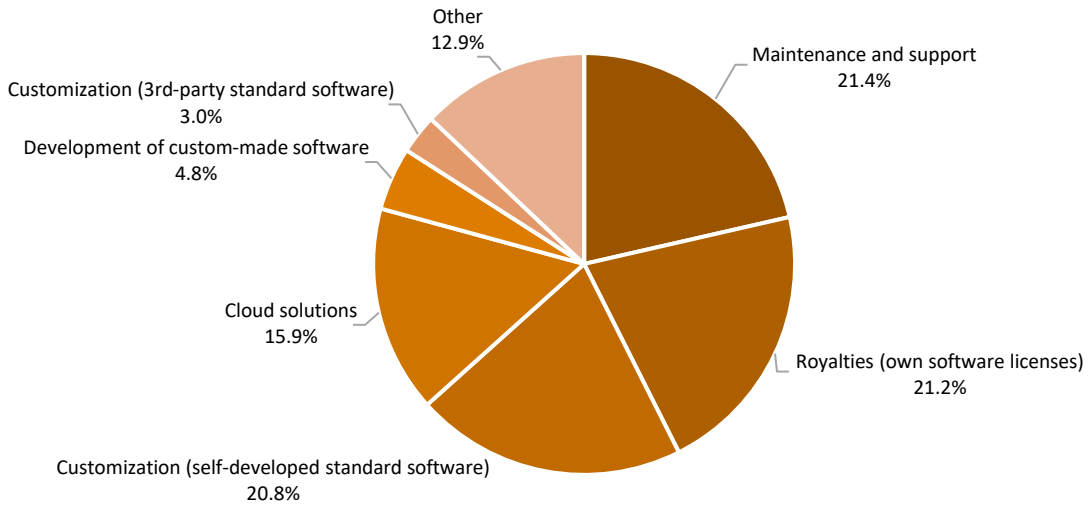
N = 165

How the Swiss Software Industry Generates its Revenues

Figure 14 shows the breakdown of sales according to the different billing models in the Swiss software industry. The largest share of revenue was billed according to variable effort with accountability (40.2%). Another significant share of revenue was billed according to fixed expenses (31.2%). Approximately 26.0% of the revenue was billed according to variable expenses without accountability or according to usage. Smaller revenue shares were billed according to the benefits generated at customers (1.2%) or according to other criteria (2.2%).

Sources of Revenue of Standard Software Manufacturers

Figure 15: Revenue sources of standard software manufacturers as a percentage of the sub-industry revenue



Source: SSIS 2021

N = 55

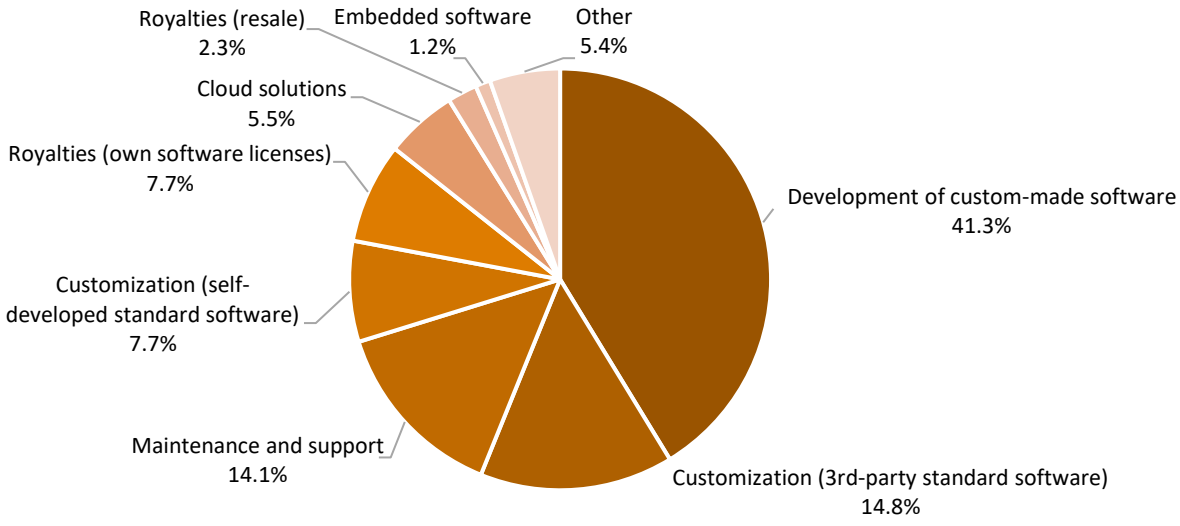
Where Standard and Custom Software Manufacturers Generate Revenues

For manufacturers of standard software (see Figure 15), royalties from own software licenses (21.2%), maintenance and support (21.4%), and customizations of self-developed standard software (20.8%) account for almost two thirds of the revenue. Revenues from cloud solutions revenue has grown in importance since 2019 and now accounts for 15.9%.

For manufacturers of custom software (see Figure 16), custom software development is the largest source of revenue (41.3%). Customization of 3rd-party standard software and maintenance and support have gained in importance since 2019.

Sources of Revenue of Custom Software Manufacturers

Figure 16: Revenue sources of custom software manufacturers as a percentage of the sub-industry revenue

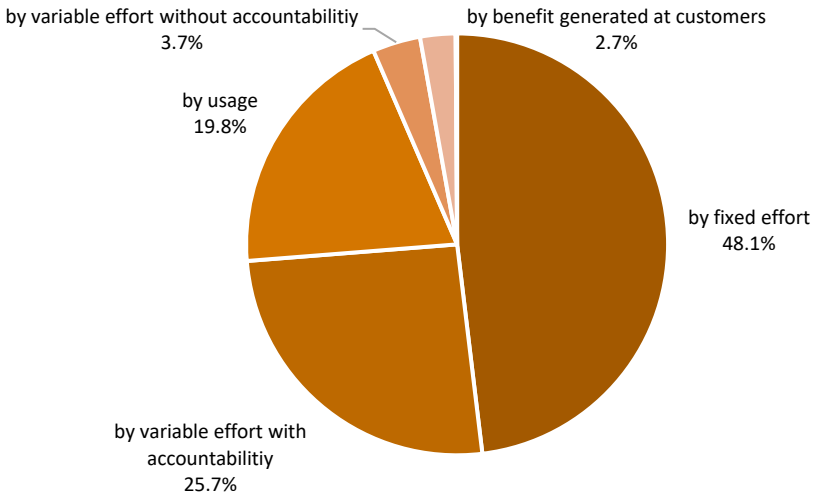


Source: SSIS 2021

N = 59

Billing Models of Standard Software Manufacturers

Figure 17: Billing models of standard software manufacturers as a percentage of the sub-industry revenue



Source: SSIS 2021

N = 55

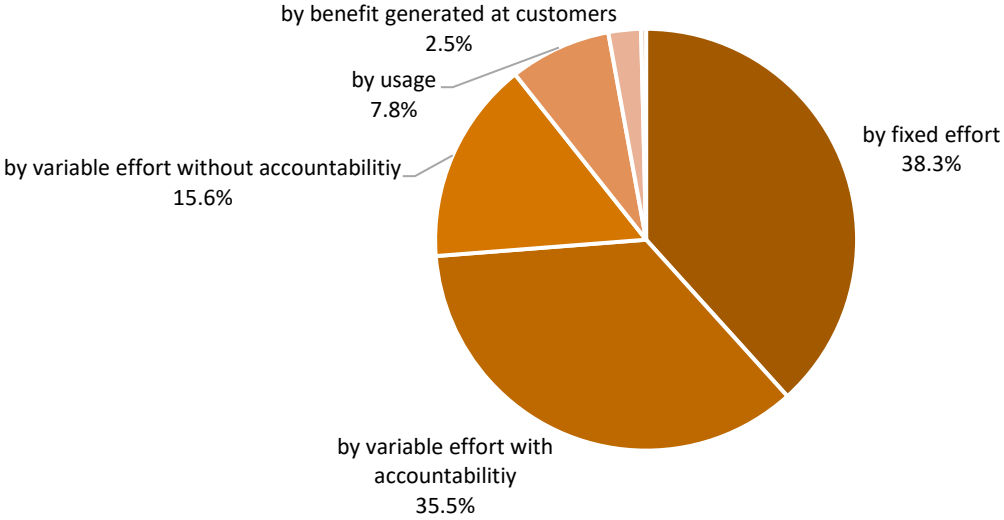
How Standard and Custom Software Manufacturers Generate Revenues

Figure 17 shows that standard software manufacturers bill almost half of their revenue according to fixed effort (48.1%). Standard software manufacturers rely on two other critical billing models: variable effort with accountability (25.7%) and usage (19.8%).

Figure 18 shows that custom software manufacturers rely primarily on billing by fixed effort (38.3%) and variable effort with accountability (35.5%). Billing according to variable effort without accountability (15.6%) and according to use play only subordinate roles (7.8%).

Billing Models of Custom Software Manufacturers

Figure 18: Billing models of custom software manufacturers as a percentage of the sub-industry revenue



Source: SSIS 2021

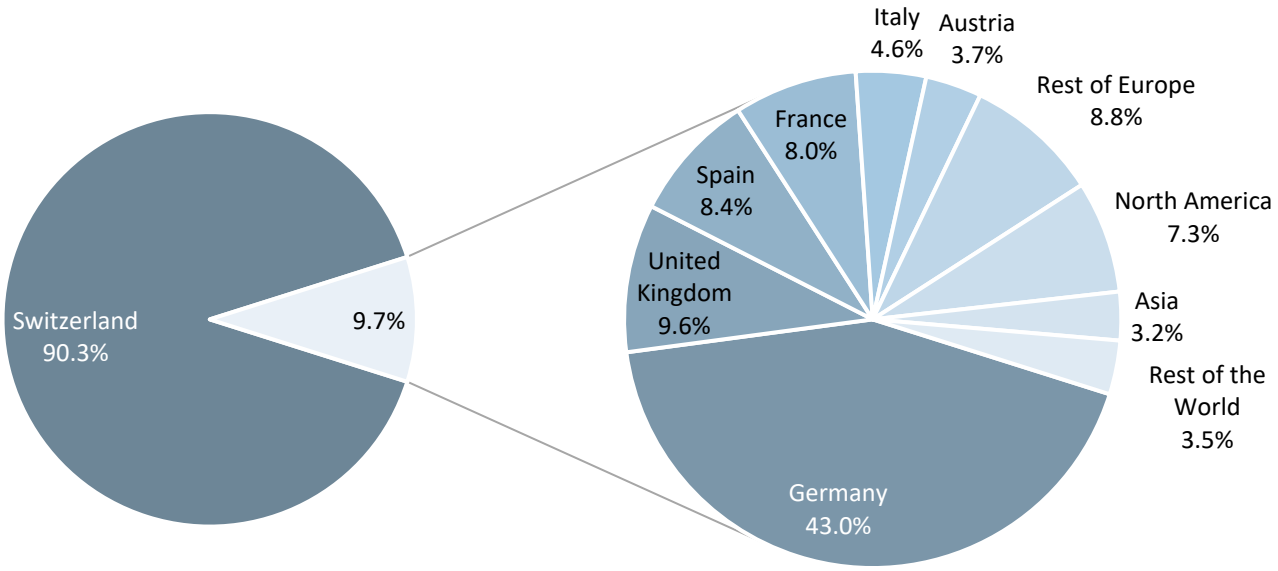
N = 59

Spotlight on

Internationalization & Sourcing

Degree of Internationalization and Target Markets

Figure 19: Distribution of international revenue



Source: SSIS 2020

N = 163

The Swiss software industry generated

9.7%

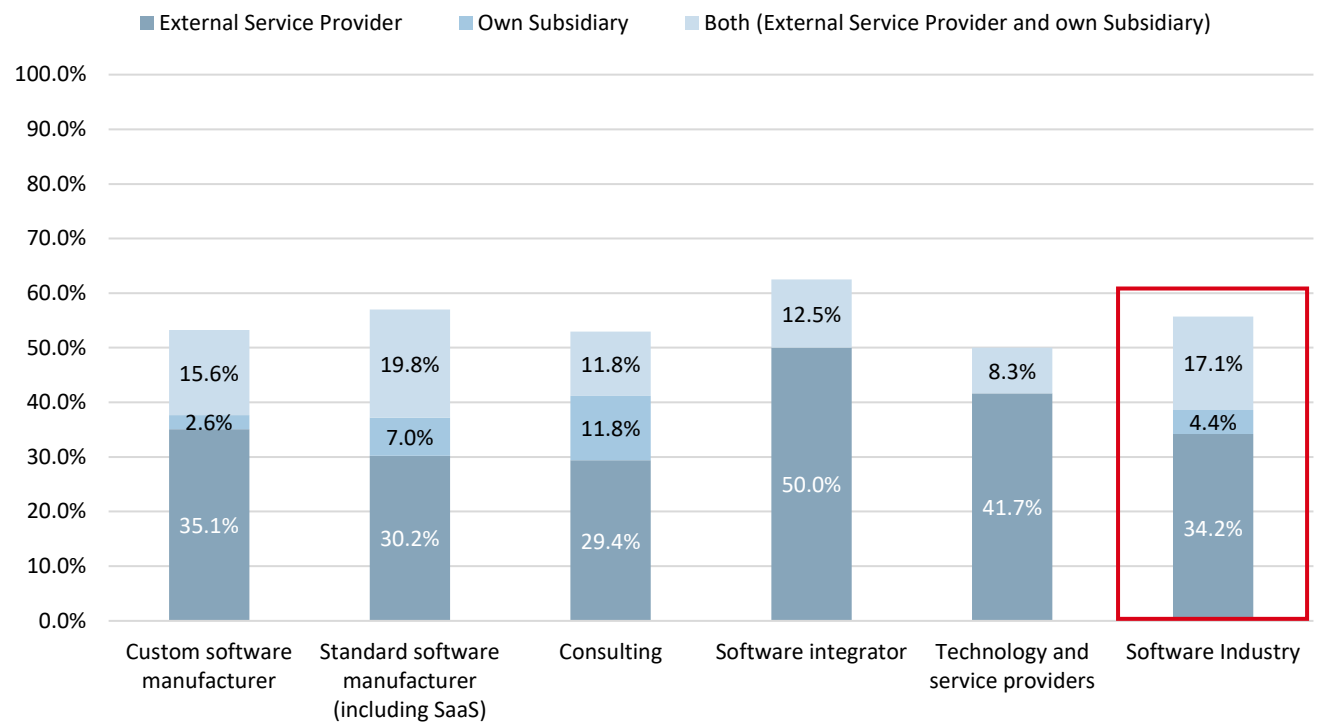
of its revenue outside Switzerland

Less Revenue From International Markets

Figure 21 shows the distribution of revenues of the Swiss software industry and the domestic market and international markets in 2020. Compared to 2019, the share of revenues generated abroad has decreased from 14% to 9.7%. As in previous years, Germany is the most important export market (43.0% of revenues generated abroad). Smaller shares of revenues were generated in the United Kingdom (9.6% of revenues generated abroad), Spain (8.4% of revenues generated abroad), and France (8.0% of revenues generated abroad). Overseas export markets continue to be of minor importance.

Outsourcing Yes or No

Figure 20: Percentage of companies that outsource by sub-industries



Source: SSIS 2020

N = 228

Among Swiss software companies

55.7%

do source products and/or services

Outsourcing in the Swiss Software Industry

Sourcing, i.e., the development, improvement, and operation of IT products and/or services by external service providers and/or subsidiaries, is crucial for Swiss software companies. Figure 20 shows the propensity of Swiss software companies to contract external service providers, their own subsidiaries, or both external service providers and their own subsidiaries in 2020.

Our results show that the propensity to source is highest among software integrators (62.5%), standard software manufacturers (57%), and custom software manufacturers (53.3%), followed by consulting firms (53%) and technology and service providers (50%). Overall, about 55.7% of the companies surveyed source.

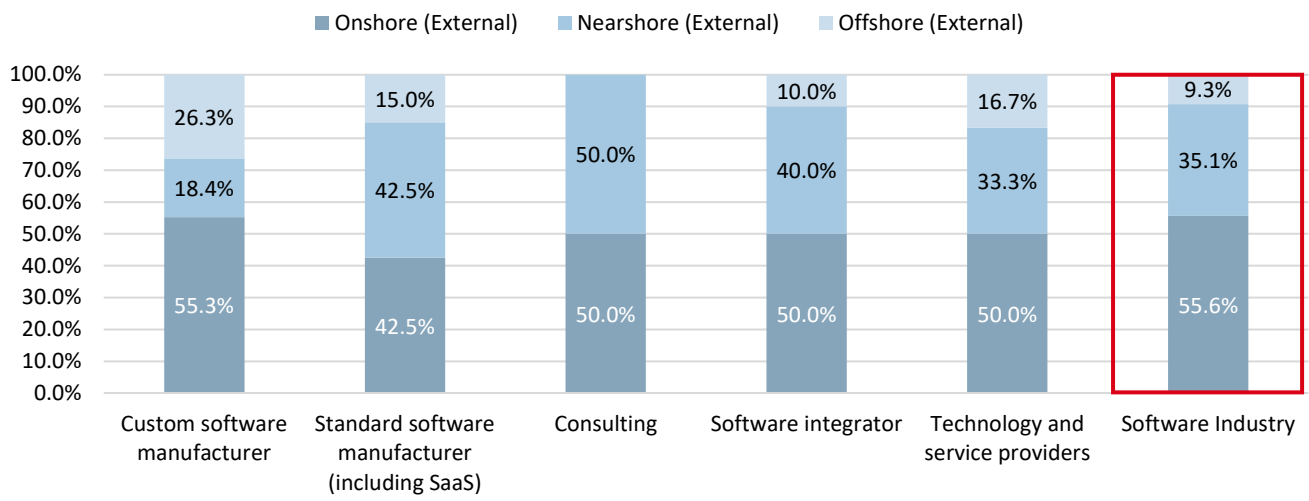
50% of software integrators source their software from external service providers, followed by technology and service companies (41.7%), custom software manufacturers (35.1%), and standard software manufacturers (30.2%).

In contrast, the tendency to source from their own subsidiaries is highest among consulting companies (11.8%), followed by standard software manufacturers (7%) and custom software manufacturers (2.6%).

About 17.1% of the Swiss software industry sources both from external service providers and subsidiaries.

Sourcing Locations for External Service Providers

Figure 21: Percentage of onshoring, nearshoring, and offshoring from external service providers



Source: SSIS 2021

N = 159

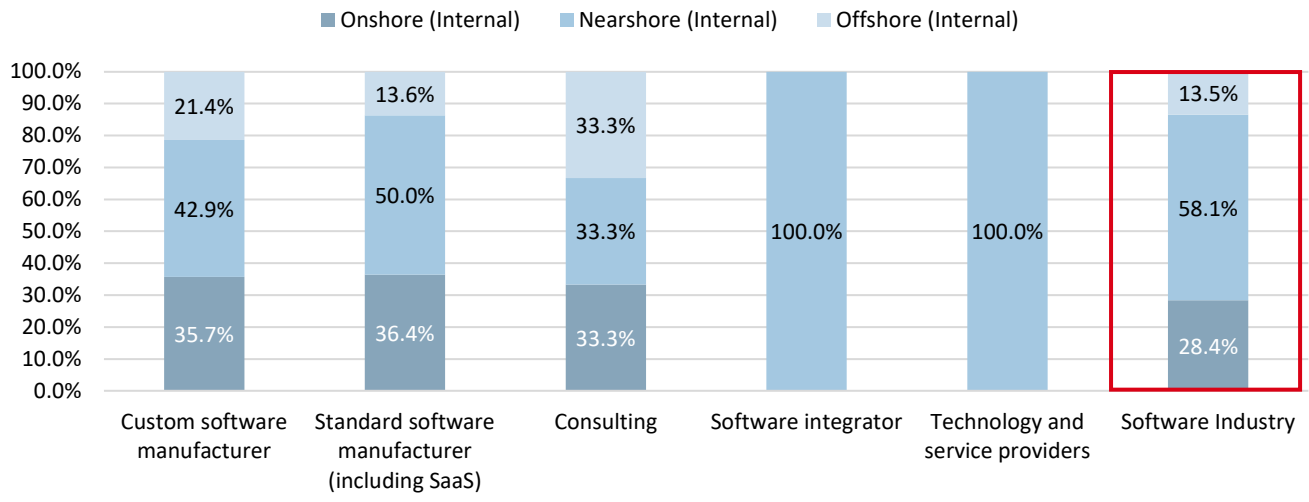
Locations of Outsourced Activities

Figure 21 shows the sourcing locations for external service providers in 2020. Custom software manufacturers (26.3%) had the highest propensity to source products and/or services from offshore locations (i.e., more than 3000 km from Switzerland). In contrast, consulting companies (50%) focused on nearshore providers within a radius of 3000 km. However, the Swiss software industry relies to a large extent on Swiss service providers.

Figure 22 shows the locations of the subsidiaries of Swiss software companies in 2020. 33.3% of consulting firms, 21.4% of custom software vendors, and 13.6% of standard software vendors had subsidiaries in remote locations (i.e., more than 3000 km away from Switzerland). Interestingly, most Swiss software companies with subsidiaries had them in places within a 3000 km radius of Switzerland.

Locations of Own Subsidiaries

Figure 22: Percentage of onshoring, nearshoring, and offshoring from internal service providers

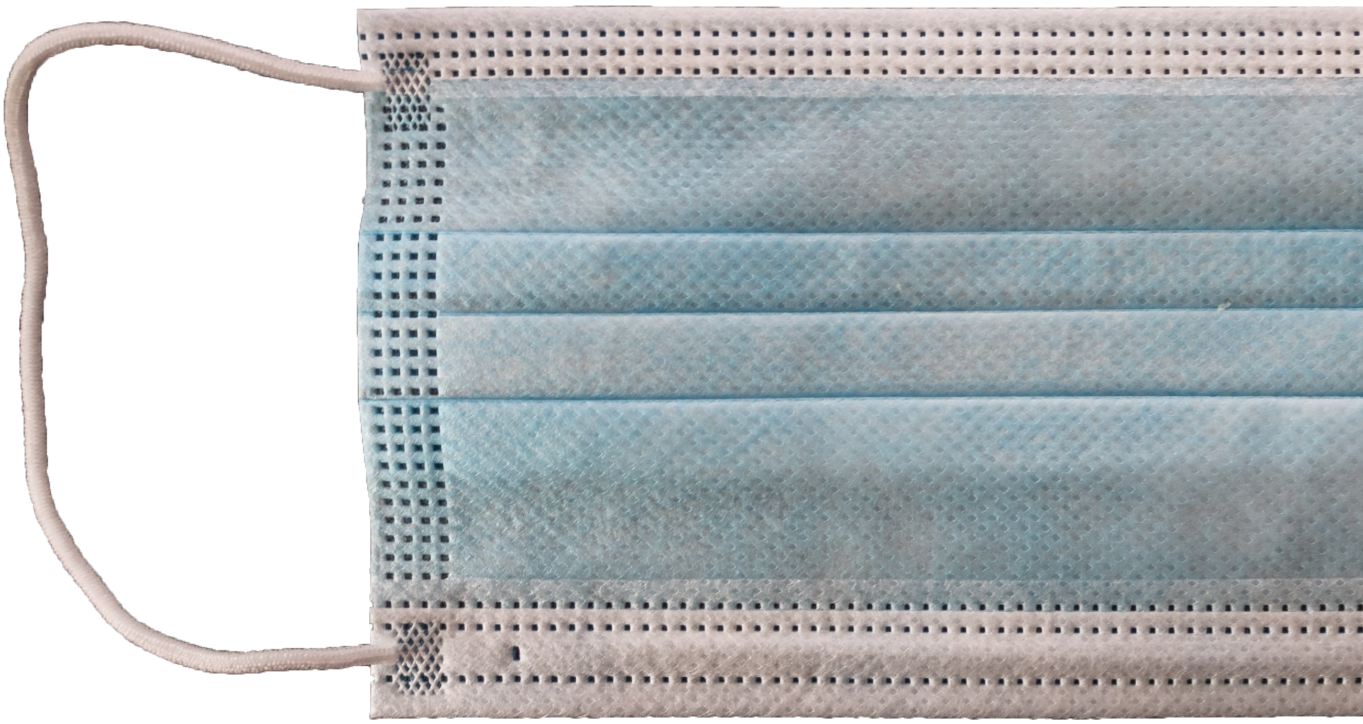


Source: SSIS 2021

N = 159

Spotlight on

Resilience[1]



[1] Resilience is the process by which an actor builds and uses its capacities to interact with the environment in ways that have a positive impact and maintain functioning before, during, and after adversity.

Perceived Resilience BEFORE the COVID19 Pandemic

Figure 23: Resilience perceived by participating companies BEFORE the COVID19 pandemic

Source: SSIS 2021

N = 222

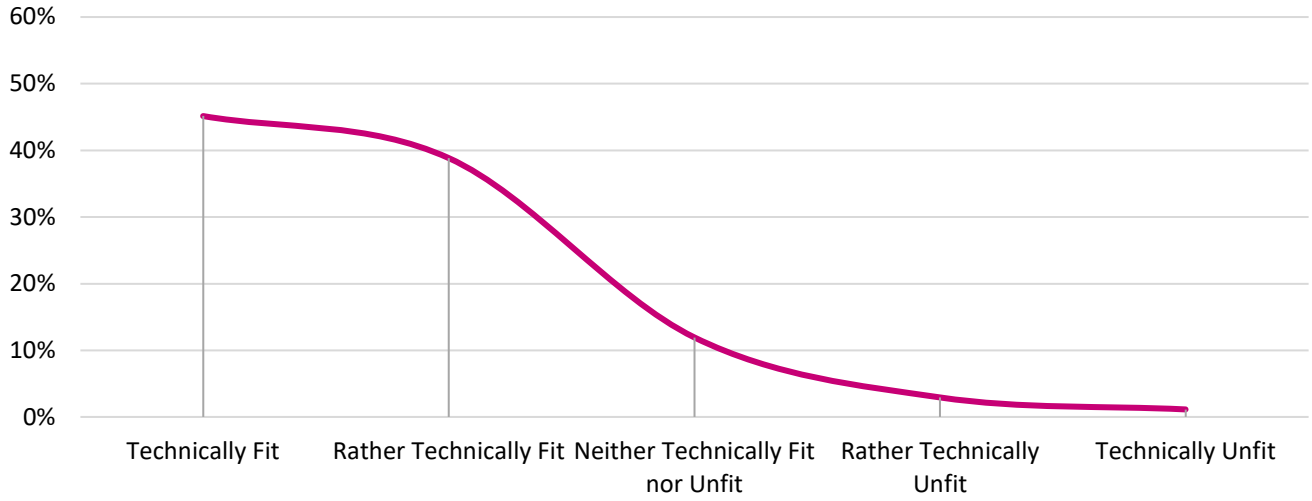
High Perceived Resilience BEFORE the COVID19 Pandemic

Figure 23 shows the perceived resilience of the Swiss software companies participating in the SSIS 2021 before the COVID19 pandemic as a distribution from highly resilient to not resilient at all. 72.9% considered themselves resilient. Of them, 17.2% even considered themselves highly resilient. In contrast, only 5% considered themselves not resilient, and of these, only 0.6% considered themselves not resilient at all.

Figure 24 shows the perceived technological fitness of the Swiss software companies participating in SSIS 2021 before the COVID19 pandemic as a distribution from technologically fit to technologically unfit. Here, technological fitness reflects the perceived ability to keep up with technological advances. 84% considered themselves technologically fit. In contrast, only 4.1% considered themselves technologically unfit.

Perceived Technological Fitness BEFORE the COVID19 Pandemic

Figure 24: Technological fitness perceived by participating companies BEFORE the COVID19 pandemic

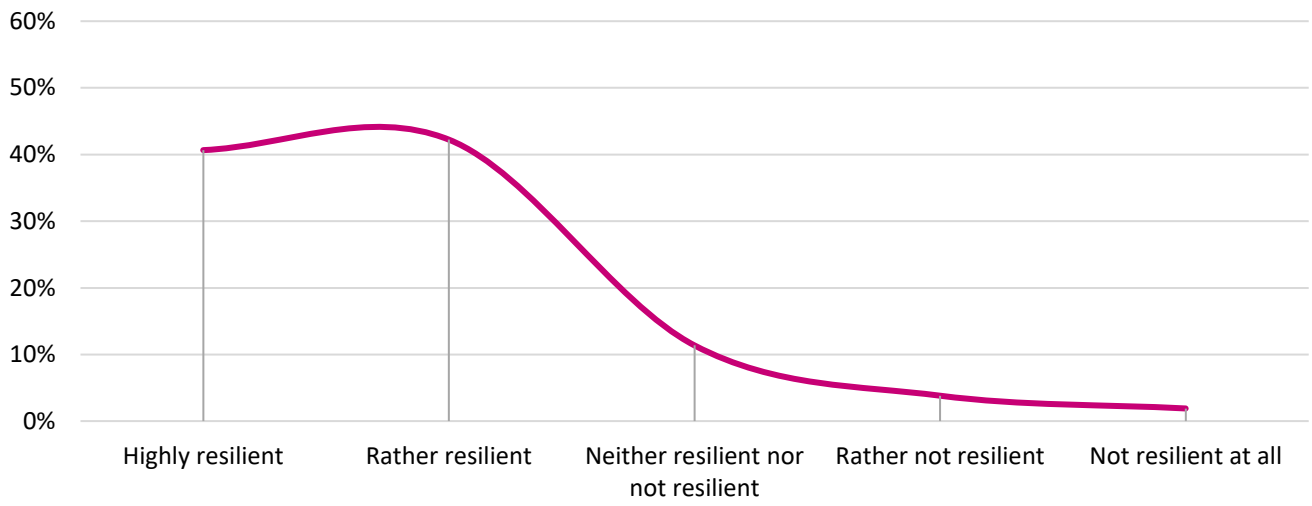


Source: SSIS 2021

N = 222

Perceived Resilience DURING the COVID19 Pandemic

Figure 25: Resilience perceived by participating companies DURING the COVID19 pandemic



Source: SSIS 2021

N = 222

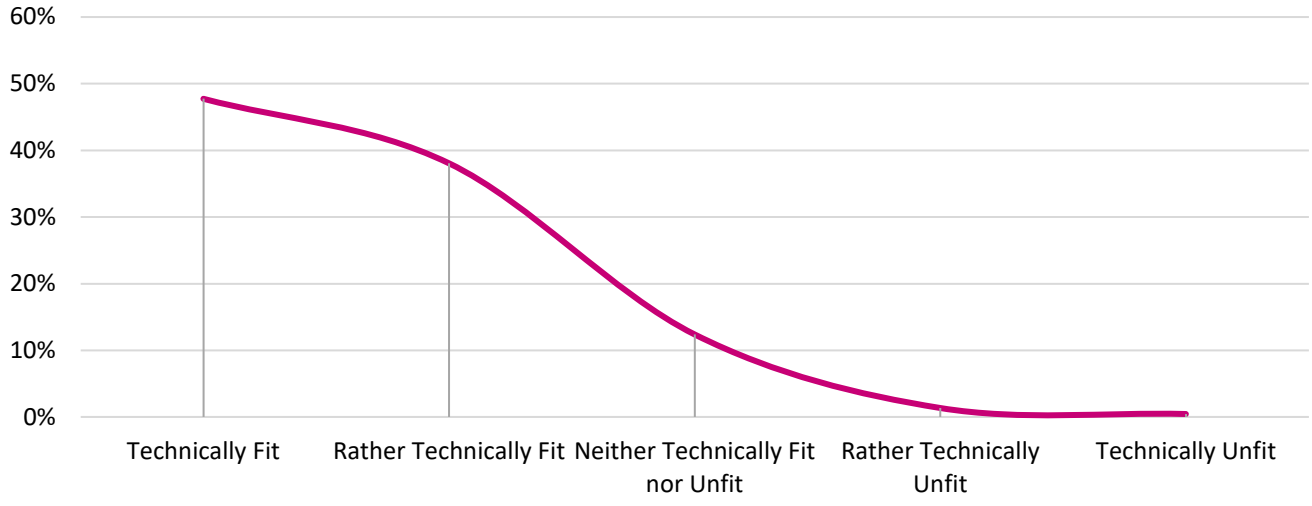
Even Higher Perceived Resilience DURING the COVID19 Pandemic

Figure 25 shows the perceived resilience of the Swiss software companies participating in the SSIS 2021 during the COVID19 pandemic as a distribution from highly resilient to not resilient at all. 82.9% considered themselves resilient (before the COVID19 pandemic 72.9%). Of them, a stunning 40.7% even considered themselves highly resilient. In contrast, only 5.7% considered themselves not resilient, and of these, 1.9% considered themselves not resilient at all.

Figure 26 shows the perceived technological fitness of the Swiss software companies participating in SSIS 2021 during the COVID19 pandemic as a distribution from technologically fit to technologically unfit. Technological fitness reflects the perceived ability to keep up with technological advances. 85.8% considered themselves technologically fit (before the COVID19 pandemic 84%). In contrast, only 1.8% considered themselves technologically unfit.

Perceived Technological Fitness DURING the COVID19 Pandemic

Figure 26: Technological fitness perceived by participating companies DURING the COVID19 pandemic

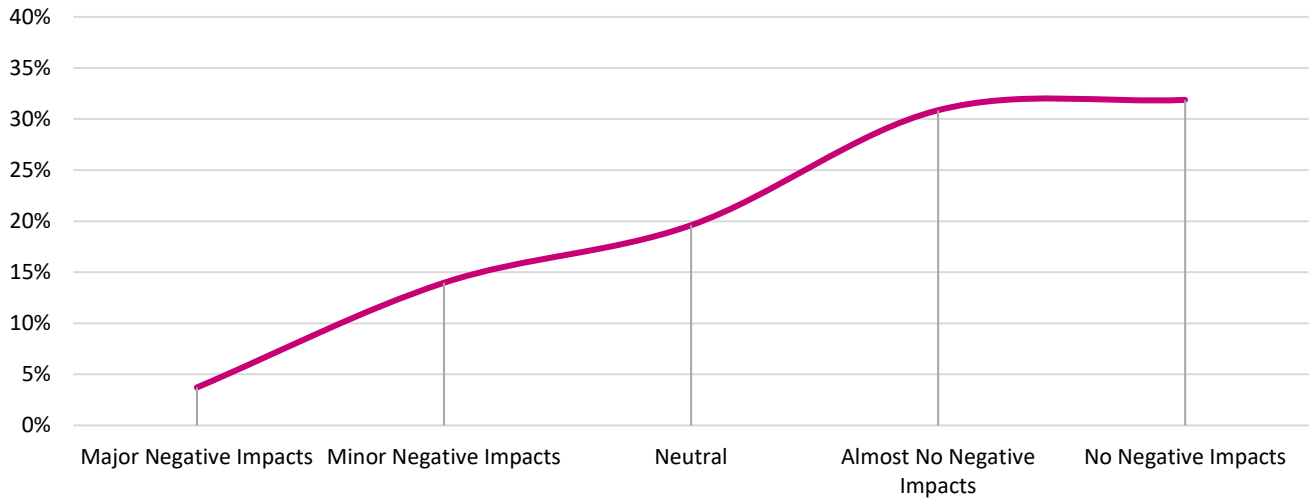


Source: SSIS 2021

N = 222

Perceived Impact of the COVID19 Pandemic on Business Success

Figure 27: Perceived impact of the COVID19 pandemic on the participating companies' business success



Source: SSIS 2021

N = 222

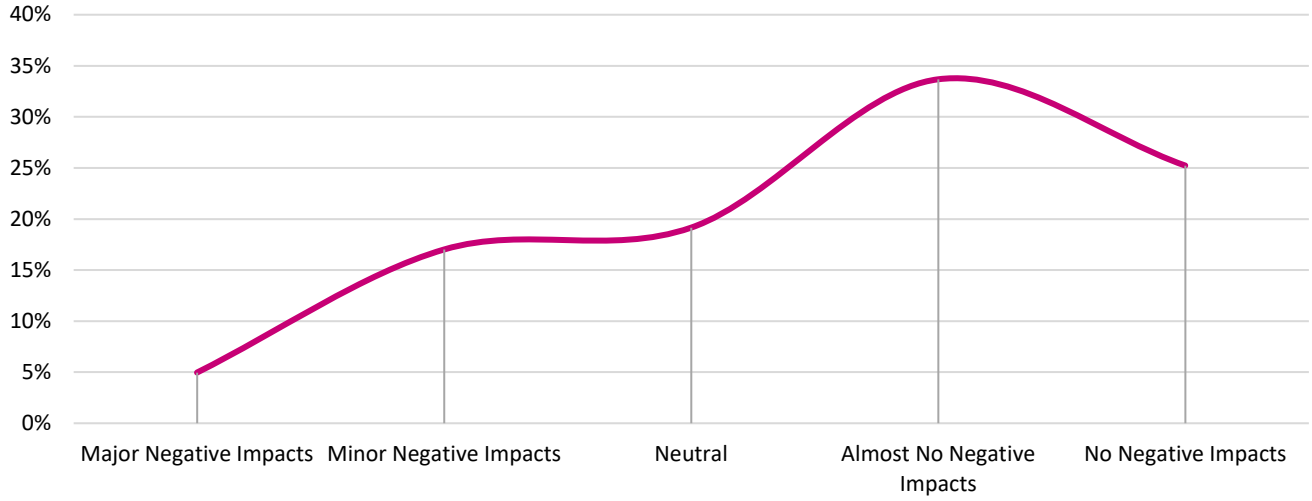
Swiss Software Companies Hardly Experienced Any Negative Effects

Figure 27 shows the perceived impact of the COVID19 pandemic on the business success of the Swiss software companies that participated in SSIS 2021, in a distribution from major negative impact to no negative impact. 62.7% of them experienced no or almost no negative impacts on their business success. In contrast, 17.7% experienced minor or even major negative impacts on their business success.

Figure 28 shows the perceived impact of the COVID19 pandemic on the market performance of the Swiss software companies that participated in SSIS 2021 in a distribution from major negative impact to no negative impact. 58.9% of these companies experienced no or almost no negative impact on their market performance. In contrast, 22.0% experienced minor or even major negative impacts on their market performance.

Perceived Impact of the COVID19 Pandemic on Market Performance

Figure 28: Perceived impact of the COVID19 pandemic on the participating companies' market performance

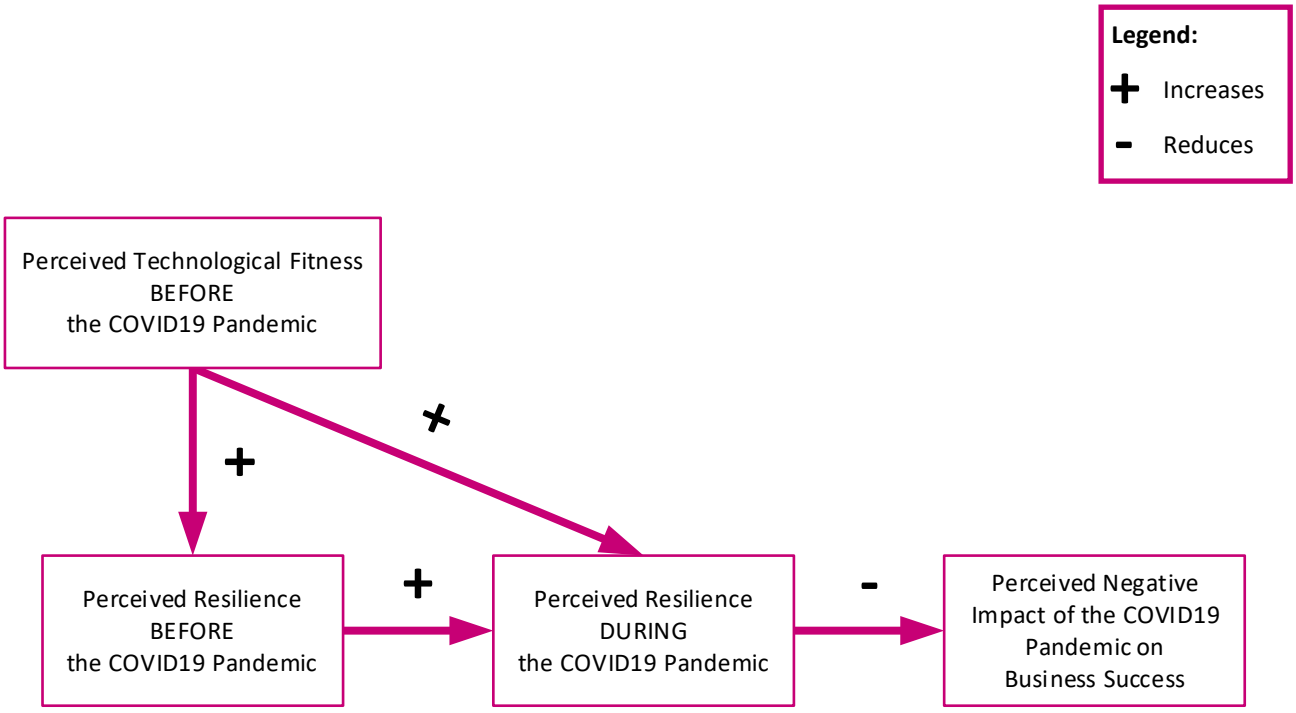


Source: SSIS 2021

N = 222

Resilience and Technological Fitness as a Prerequisite for Business Success

Figure 29: Significant correlations between resilience, technological fitness and business success



Source: SSIS 2021

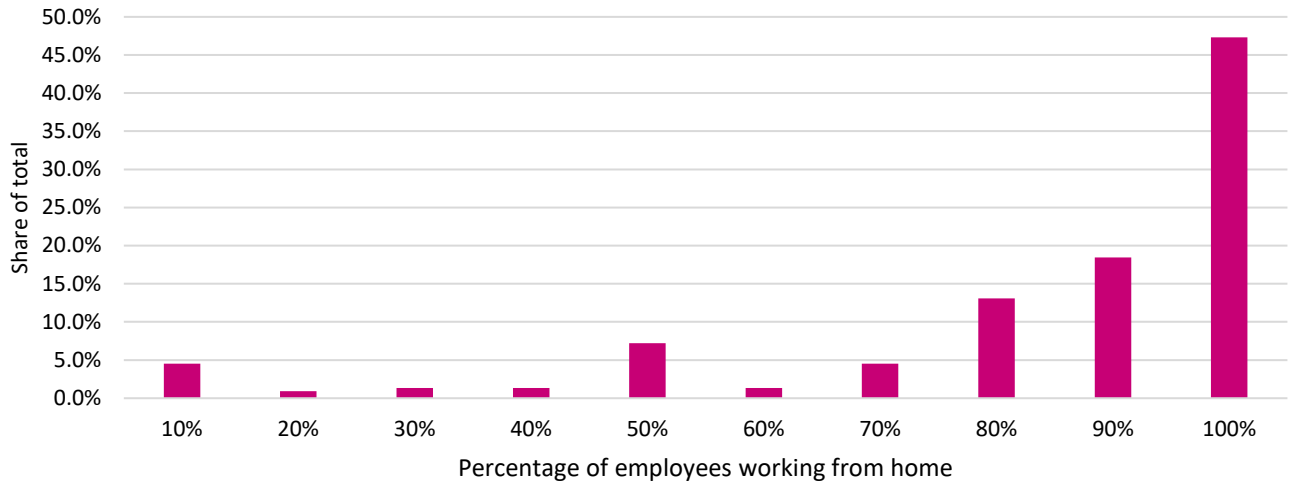
N = 222

Resilience and Technological Fitness as a Prerequisite for Business Success

Figure 29 shows the significant correlations between the perceived resilience before and during the COVID19 pandemic, the technological fitness before the COVID19 pandemic, and the perceived negative impact on the business success. Based on the responses of the Swiss software companies participating in the SSIS 2021, we found the following significant correlations: First, a significant positive correlation between perceived technological fitness before the COVID19 pandemic and the perceived resilience before the COVID19 pandemic. In other words, the more technologically fit firms perceived themselves before the COVID19 pandemic, the more resilient these firms perceived themselves before the COVID19 pandemic. Second, a significant positive correlation between perceived technological fitness before the COVID19 pandemic and the perceived resilience during the COVID19 pandemic. In other words, the more technologically fit firms perceived themselves before the COVID19 pandemic, the more resilient these firms perceived themselves during the COVID19 pandemic. Third, a significant positive correlation between perceived resilience before the COVID19 pandemic and the perceived resilience during the COVID19 pandemic. In other words, the more resilient firms perceived themselves before the COVID19 pandemic, the more resilient these firms perceived themselves during the COVID19 pandemic. Fourth, a significant negative correlation between perceived resilience during the COVID19 pandemic and the perceived negative impact on business success. In other words, the more resilient companies perceived themselves during the COVID19 pandemic, the more negligible the perceived negative impact on their business success.

Percent of Employees Working From Home During the COVID19 Pandemic

Figure 30: Percent of employees working from home during the COVID19 pandemic



Source: SSIS 2021

N = 222

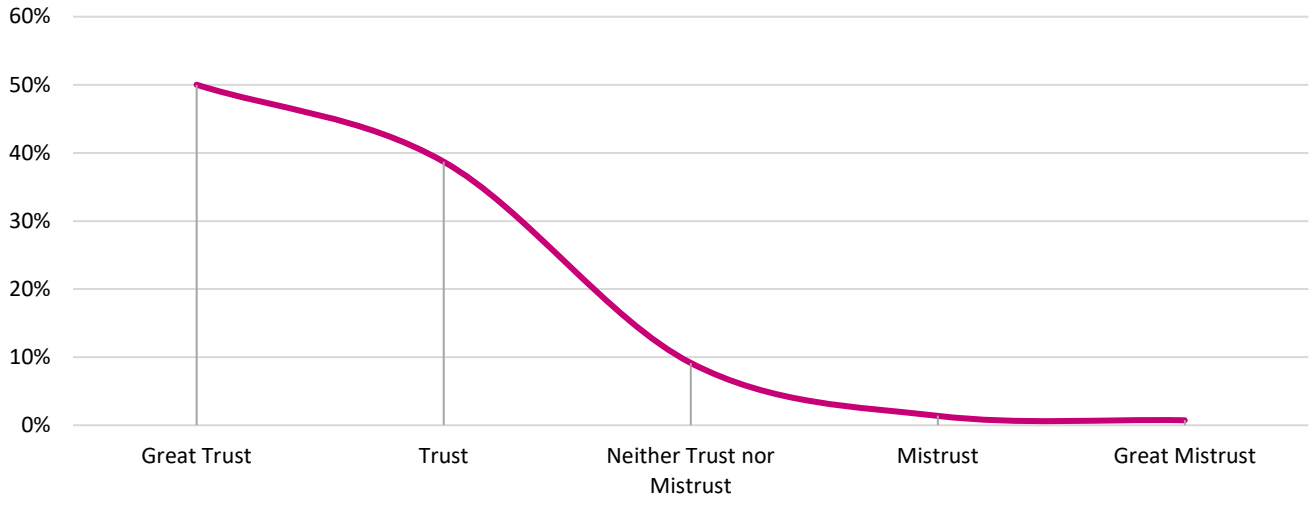
Strong Trust in Employees Who Work From Home

Figure 30 shows what percentage of employees of the Swiss software companies participating in the SSIS 2021 worked from home. Based on the responses from these companies, 47.3% of them had 100% of their employees working from home. In contrast, only 15.3% of the companies had 50% or less of their employees working from home.

Figure 31 shows how much the Swiss software companies participating in SSIS 2021 trust their employees in the home office, ranging from great trust to great mistrust. 88.7% of the companies trust their employees working from home. Of these, an astonishing 38.7% trust their employees completely. In contrast, only 2.1% mistrust their employees in the home office, and of those, 0.7% strongly mistrust them.

Trust in Employees Who Work From Home

Figure 31: Trust in employees who work from home

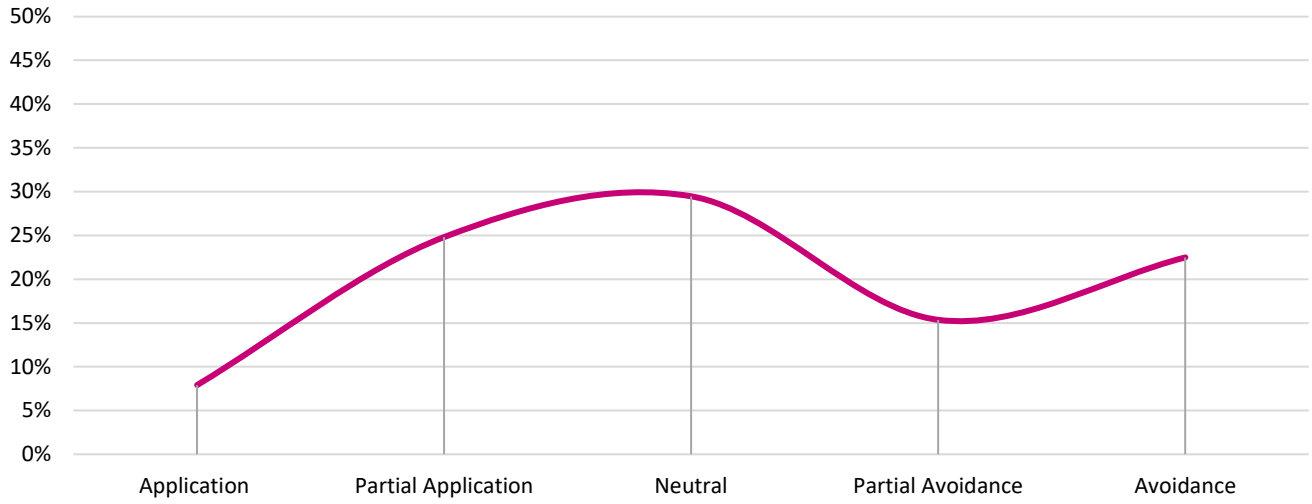


Source: SSIS 2021

N = 222

Behavior Control of Employees Working From Home

Figure 32: Application of behavior control of employees working from home



Source: SSIS 2021

N = 222

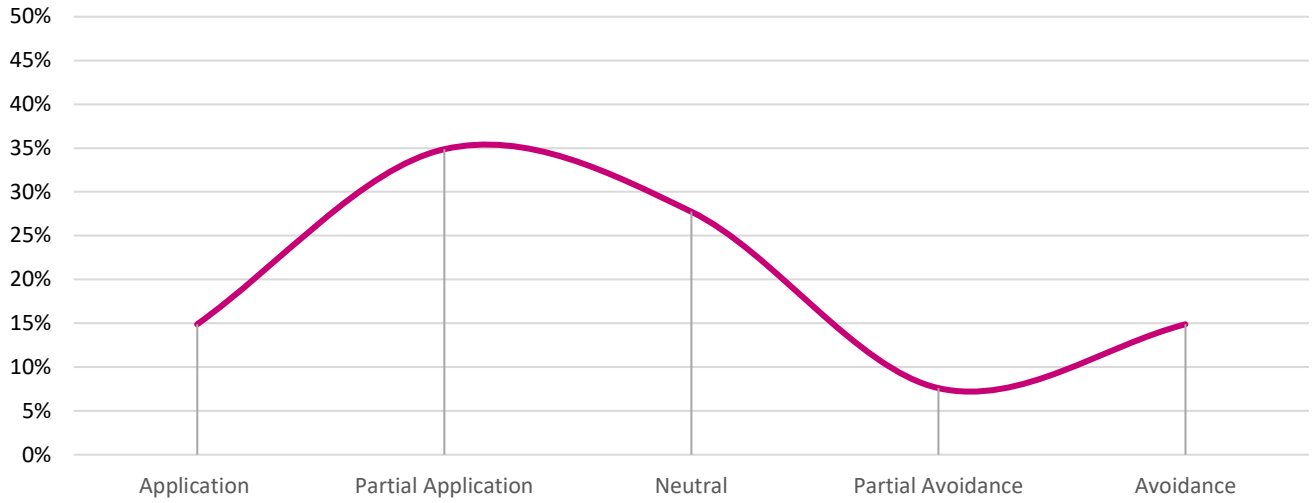
The Application of Formal Control of Employees Working From Home

Figure 32 shows the application of behavioral control on employees working from home. Behavioral control refers to a formal control mode in which the controller evaluates the behavior of the controlee and rewards them accordingly. 32.7% of the companies applied behavioral control on their employees working from home or did so at least partially. In contrast, 37.8% avoided applying behavioral control on their employees working from home.

Figure 33 shows the application of outcome control on employees working from home. Outcome control refers to a formal control mode in which the controller evaluates whether outcomes are met and rewards accordingly. 49.8% of the companies applied outcome control on their employees working from home or did so at least partially. In contrast, 22.5% avoided applying outcome control on their employees working from home.

Outcome Control of Employees Working From Home

Figure 33: Application of outcome control of employees working from home

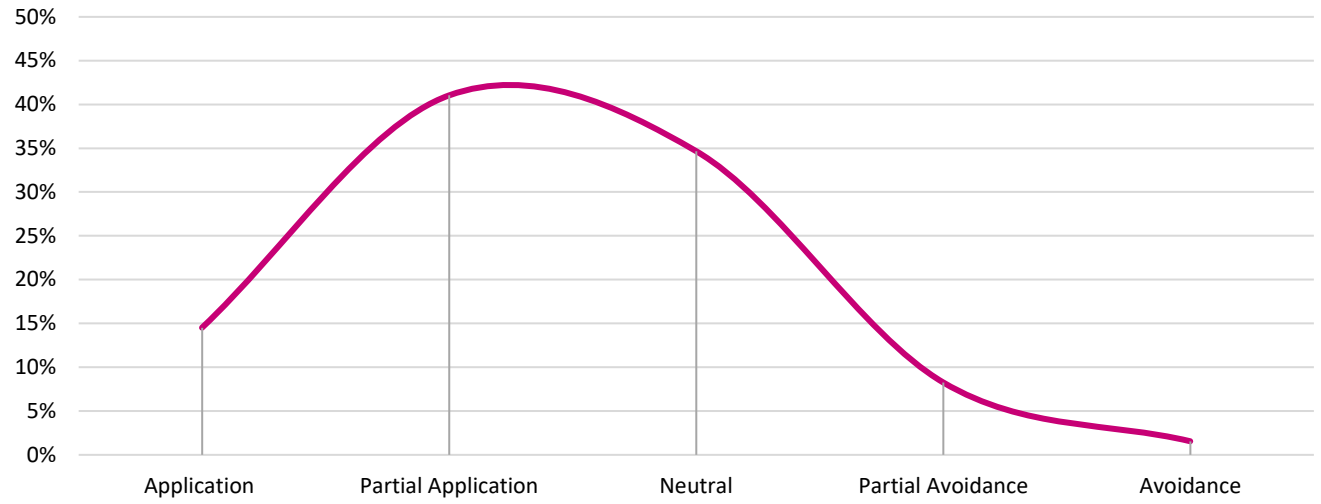


Source: SSIS 2021

N = 222

Clan Control of Employees Working From Home

Figure 34: Application of clan control of employees working from home



Source: SSIS 2021

N = 222

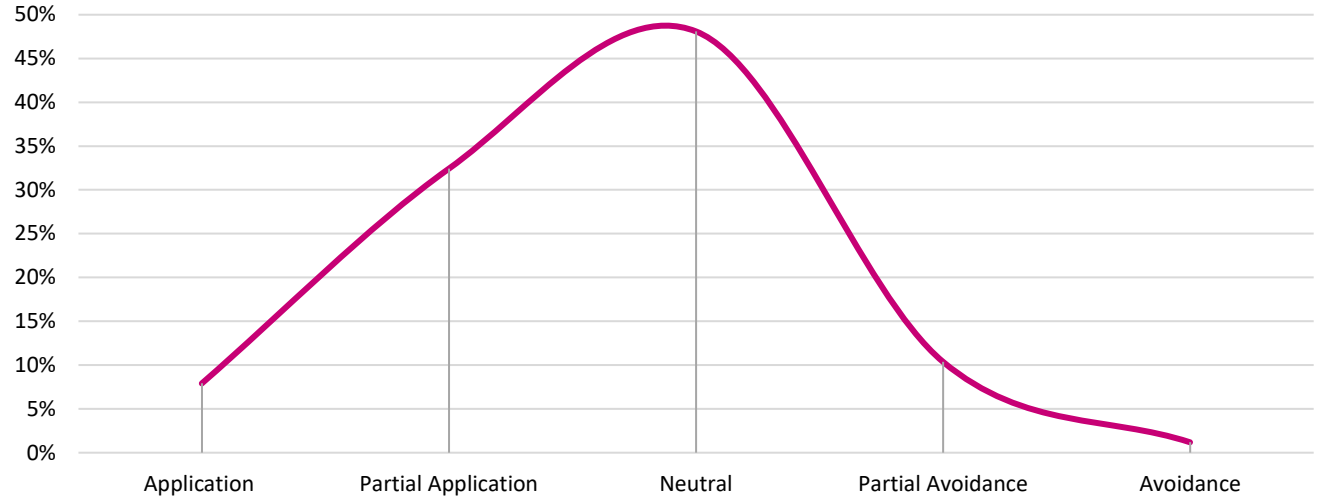
The Application of Informal Control of Employees Working From Home

Figure 34 shows the application of clan control on employees working from home. Clan control refers to an informal control mode in which a group of employees identifies and reinforces acceptable behaviors through member selection and norms. 55.5% of the companies applied clan control on their employees working from home or did so at least partially. In contrast, only 9.8% avoided applying clan control on their employees working from home.

Figure 35 shows the application of self-control on employees working from home. Self-control refers to an informal control mode in which the controllee sets own tasks and procedures. 40.3% of the companies applied self-control on their employees working from home or did so at least partially. In contrast, only 11.6% avoided applying self-control on their employees working from home.

Self Control of Employees Working From Home

Figure 35: Application of self control of employees working from home

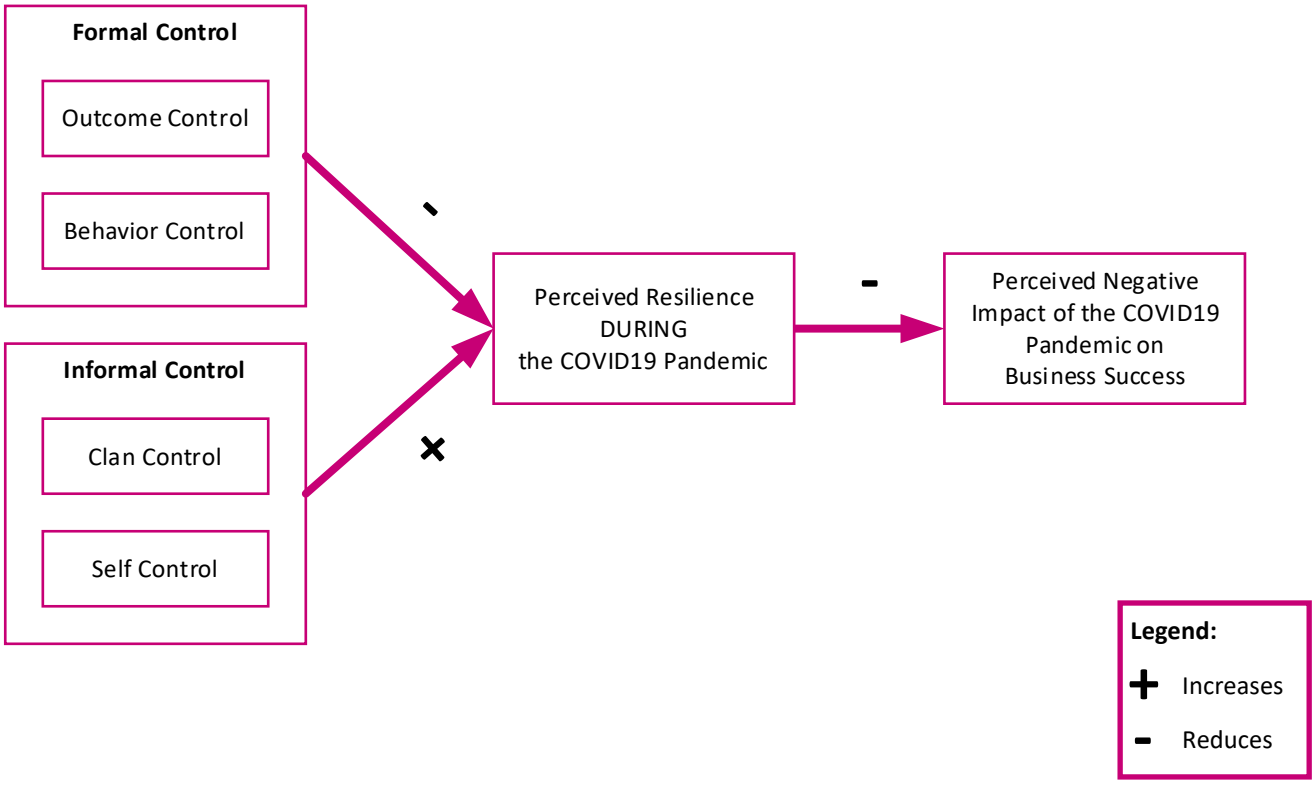


Source: SSIS 2021

N = 222

Informal Control as Vital Cornerstone of Business Success

Figure 35: Significant correlations between formal control, informal control, resilience, and business success



Source: SSIS 2021

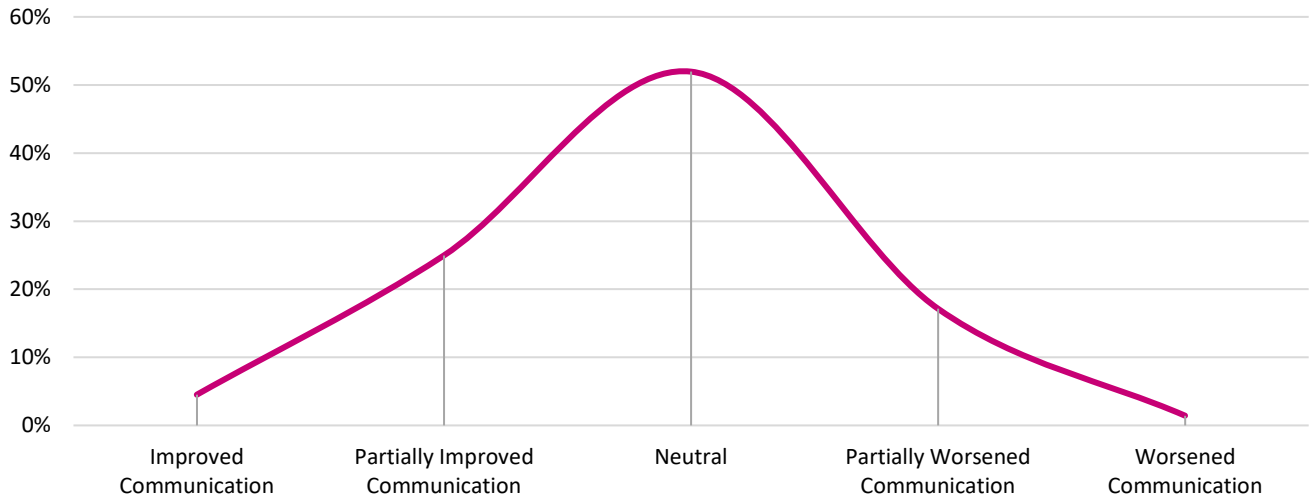
N = 222

Informal Control as Vital Cornerstone of Business Success

Figure 36 shows the significant correlations between formal and informal control perceived resilience during the COVID19 pandemic, and the perceived negative impact on the business success. Based on the responses of the Swiss software companies participating in the SSIS 2021, we found the following significant correlations: First, a significant negative correlation between the application of formal control and the perceived resilience during the COVID19 pandemic. In other words, the more companies applied formal control in terms of behavior and outcome control, the less resilient these firms perceived themselves during the COVID19 pandemic. Second, a significant positive correlation between the application of informal control and the perceived resilience during the COVID19 pandemic. In other words, the more companies applied informal control in terms of clan and self control, the more resilient these firms perceived themselves during the COVID19 pandemic. Fourth, a significant negative correlation between perceived resilience during the COVID19 pandemic and the perceived negative impact on business success. In other words, the more resilient companies perceived themselves during the COVID19 pandemic, the more negligible the perceived negative impact on their business success.

Perceived Changes in the In-House Communication

Figure 37: Perceived changes in the in-house communication



Source: SSIS 2021

N = 222

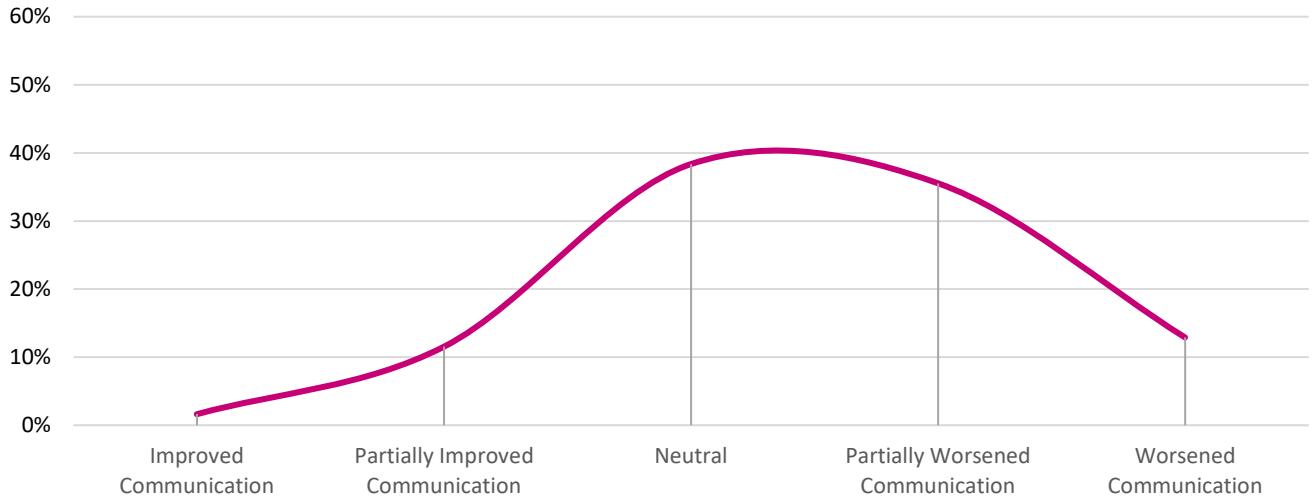
Barely Impaired Internal Communication - Difficulties With Customer Interaction

Figure 37 shows the perceived changes in the in-house communication of the Swiss software companies participating in the SSIS 2021 during the COVID19 pandemic. 29.5% perceived that their in-house communication improved, especially among their employees working from home. In contrast, 18.6% perceived that their in-house communication worsened, especially among their employees working from home.

Figure 38 shows the perceived changes in the communication with customers among the Swiss software companies participating in SSIS 2021 during the COVID19 pandemic. Here 48.5% perceived that their communication with customers worsened or became much more difficult. In contrast, 13.2% perceived that their communication with customers even improved.

Perceived Changes in the Communication with Customers

Figure 38: Perceived changes in the communication with customers

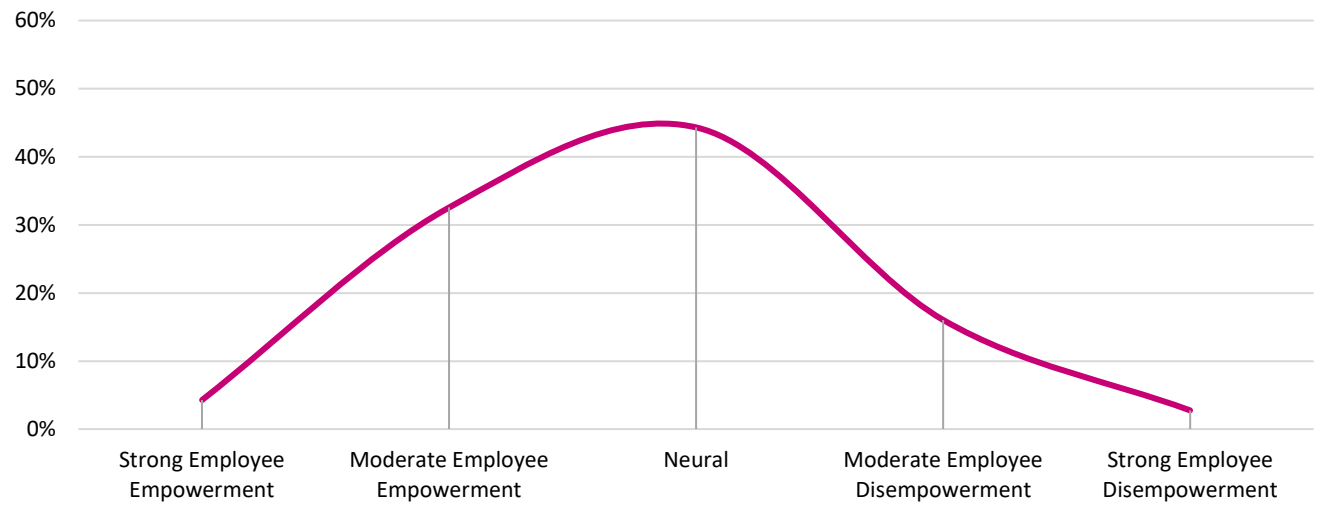


Source: SSIS 2021

N = 222

Projected Employee Empowerment After the COVID19 Pandemic

Figure 39: Projected employee empowerment after the COVID19 pandemic



Source: SSIS 2021

N = 222

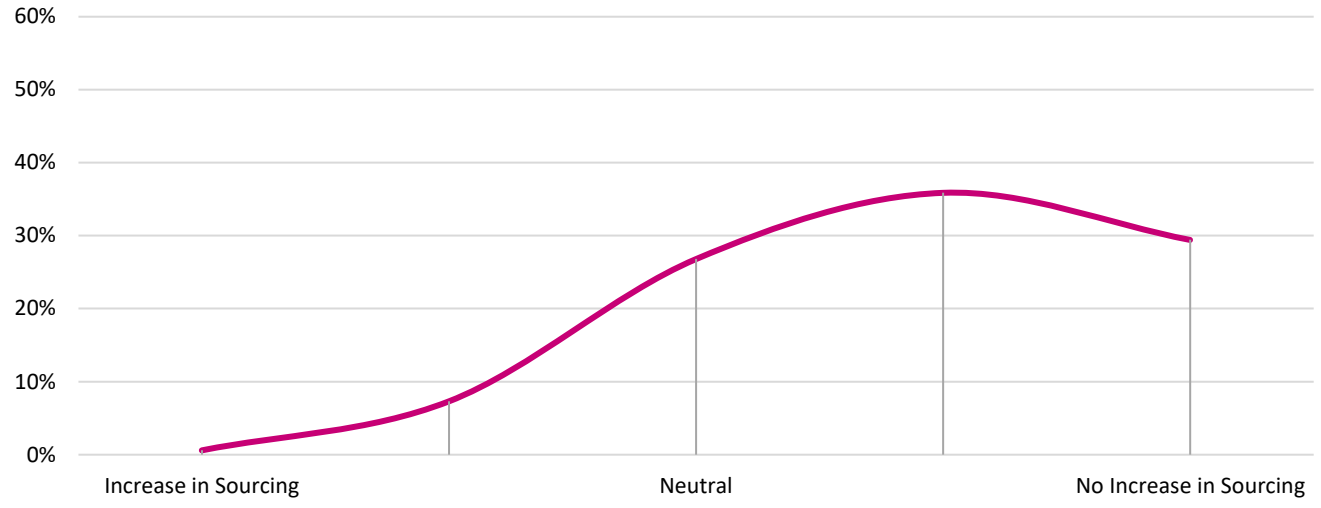
A Little More Empowerment and Hardly Any Expansion of Sourcing

Figure 39 shows the projected employee empowerment after the COVID19 pandemic among the Swiss software companies participating in the SSIS 2021. 36.9% plan to further empower their employees, and among them, 4.3% even plan to empower their employees in the future strongly. In contrast, 18.8% of the companies even think of disempowering their employees.

Figure 40 shows the projected sourcing after the COVID19 pandemic among the Swiss software companies participating in the SSIS 2021. Here 7.9% of the companies plan to increase their sourcing efforts, and among them, 0.8% plan to source much more. In contrast, 65.3% of the companies do not plan to increase their sourcing initiatives after the COVID19 pandemic.

Projected Sourcing After the COVID19 Pandemic

Figure 40: Projected sourcing after the COVID19 pandemic

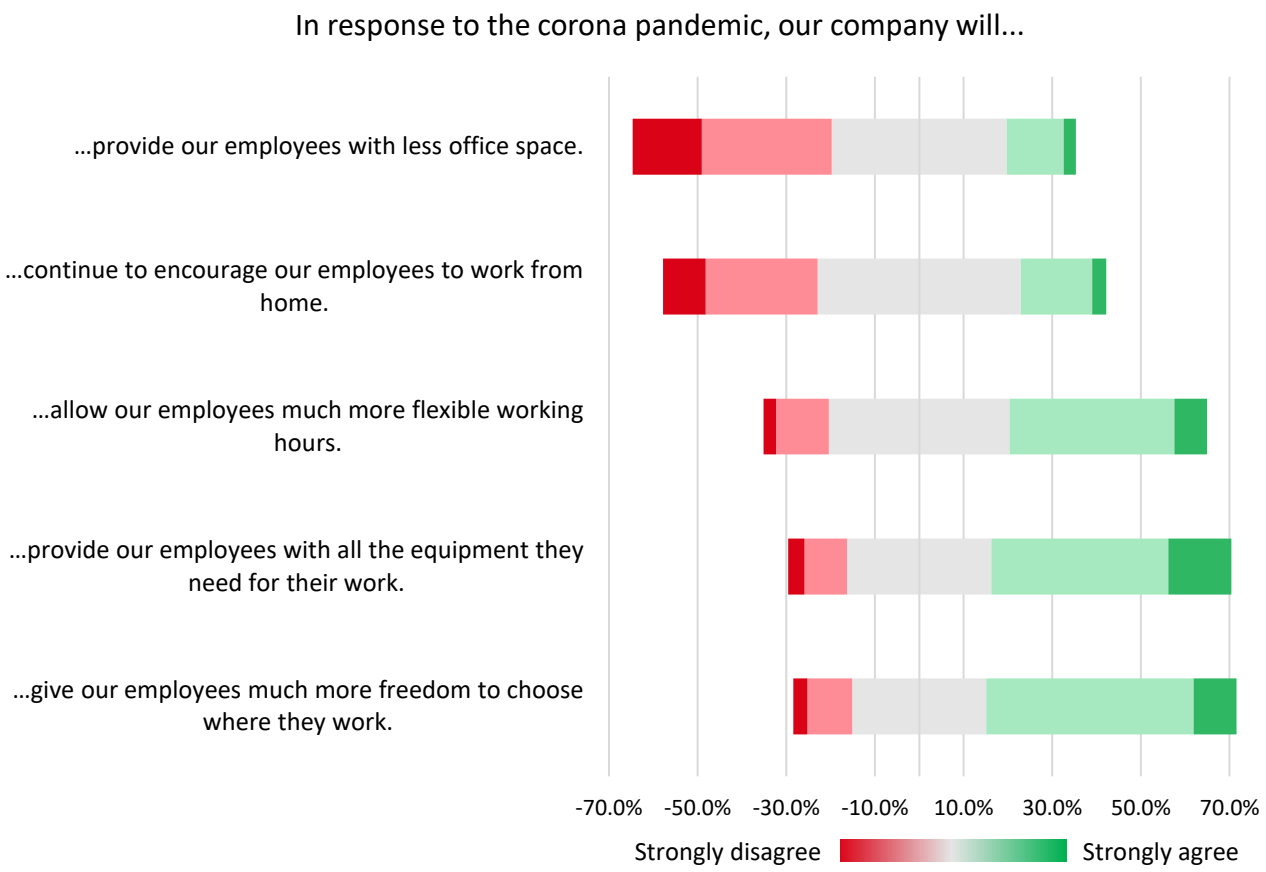


Source: SSIS 2021

N = 222

Future Workspace After the COVID19 Pandemic

Figure 41: Future workspace after the covid19 pandemic



Source: SSIS 2021

N = 222

Among Swiss software companies

56.4%

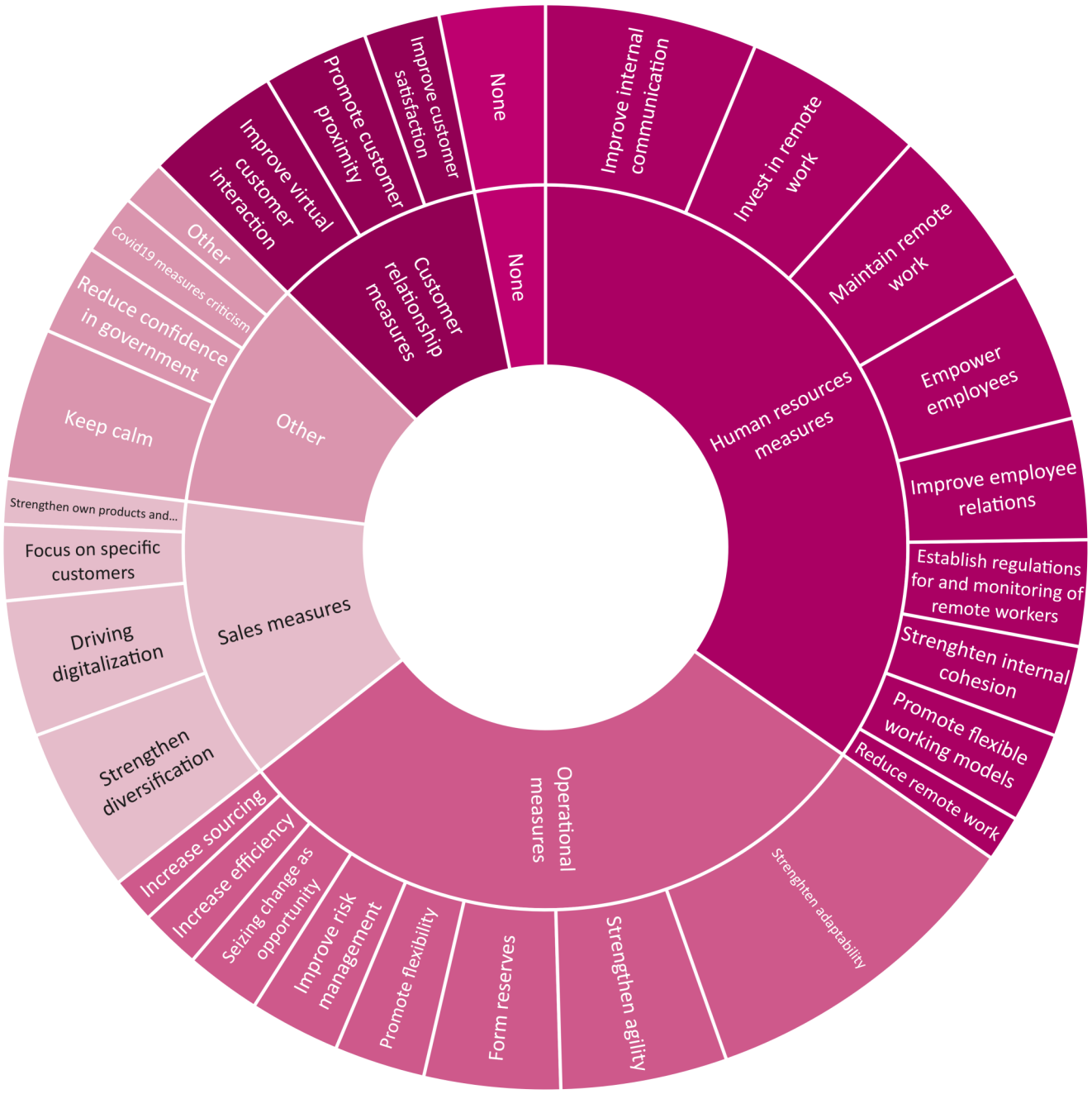
will be more flexible in terms of where their employees work

The Swiss Software Industry - An Ever More Flexible Employer

Figure 41 shows how the Swiss software industry envisions the future workplace for its employees. 56.4% of companies envision much greater flexibility regarding where their employees work (compared to 13.3% who expect less flexibility in this regard). 54.1% of companies plan to equip their employees even better (versus 13.3% who do not plan to equip their employees better). 44.5% of companies will push for much more flexible work schedules (as opposed to 14.7% who plan to have less flexibility in their employees' work schedules). 19.3% of companies will continue to encourage their employees to work from home (as opposed to 34.9% who will not continue to do so). Eventually, 15.6% of companies will reduce their office space (compared to 45% who will not do so).

Lessons Learned for Future Crises

Figure 42: Longer-term reactions to the COVID-19-pandemic in percent approval



Source: SSIS 2021

N = 222

Lessons Learned for Future Crises

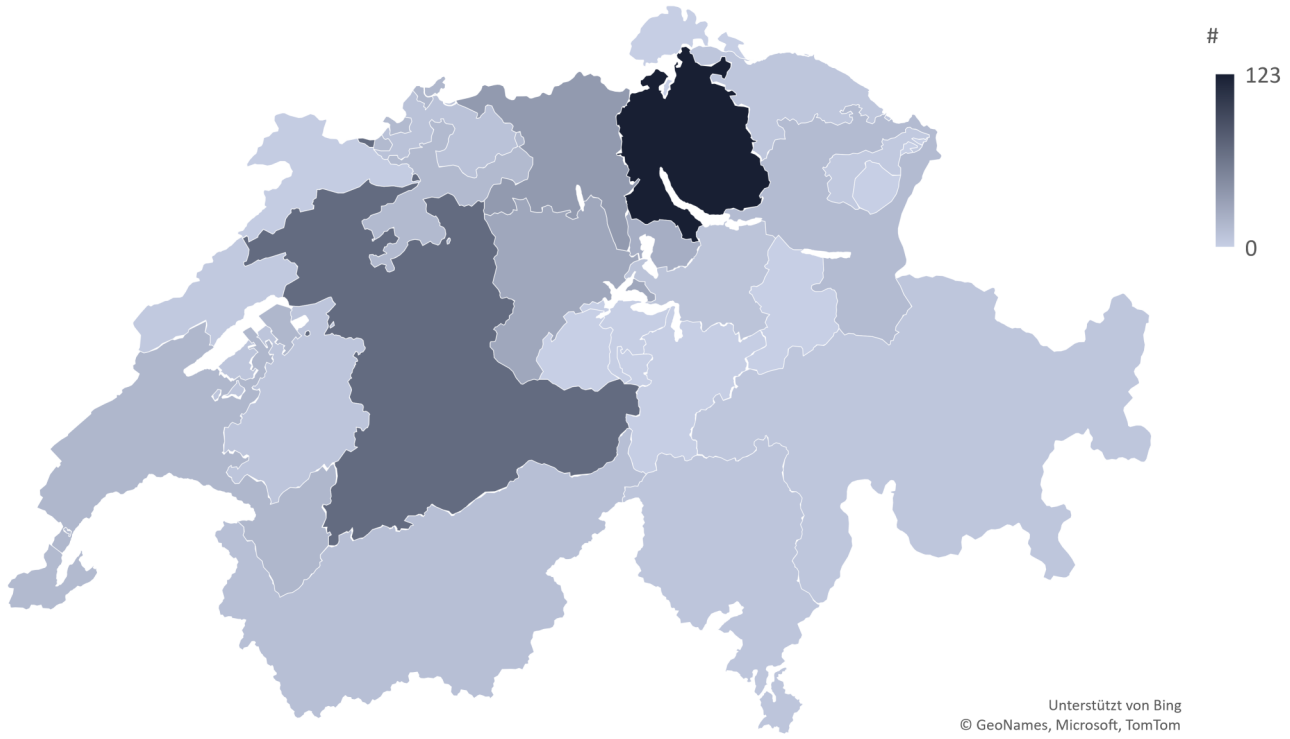
Figure 42 shows the lessons learned by participating software companies from the COVID19 pandemic. According to this figure, the majority of companies will invest in their human resources and will take measures related to their operations. Interestingly, few companies plan to invest in their customer relationships.

Method and Official Statistics

About the SSIS

Geographical Distribution of the Participants in 2020

Figure 43: Participating companies per canton



Source: SSIS 2021

N = 426

About the SSIS in 2021

This year we conducted the Swiss Software Industry Survey (SSIS) for the sixth time. With the sixth 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 survey 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 23 cantons (see Figure 43)
- …and builds on a large sample size with 510 participants, 168 post-stratified data points on revenue and profitability

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 relied on the extrapolation method, which builds on state-of-the-art econometrical procedures (post-stratification by region, sub-industries, company size, and revenue)

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).

Official Statistics - Employees and Added Value

Table 1: Distribution of Added Value in 2019 and distribution of Full-Time Equivalents in 2020 by industry

Sections	Added Value	FTE
Mining and quarrying	0.1%	0.1%
Manufacturing	18.9%	15.6%
Energy supply, water supply, waste management	1.9%	1.1%
Construction	5.0%	8.4%
Trade; repair of motor vehicles and motorcycles	15.1%	13.1%
Transportation, storage, information and communication	5.7%	6.6%
Accommodation and food service activities	1.9%	4.4%
IT and other information services	2.9%	2.7%
Financial service activities	5.5%	2.7%
Insurance	4.4%	1.1%
Real estate activities, professional, scientific, technical and administrative activities	17.9%	16.0%
Public administration	10.2%	4.3%
Education	0.6%	6.2%
Human health and social work activities	7.9%	13.8%
Arts, entertainment, recreation and other services	2.0%	4.0%

Source: BESTA , Added Value 2019, FTEs 2020

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 (i.e., 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 2.9% to the Swiss GDP (see Table 1) and employs almost 2.7% of all jobholders in Switzerland, and is one of the strongest growing sectors.

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. Compatibility with official statistics is ensured by focusing on two NOGA codes (62, 63). Yet, we provide a richer picture of what is going on within these codes. Specifically, the report enables the following additional insights:

- Trend analysis of key performance indicators incl. EBIT, EBITDA, R&D expenditure, employee growth, and revenue growth
- Indicators on profitability
- Analyses along practically relevant categories (standard vs. custom software, maintenance vs. testing, etc.).