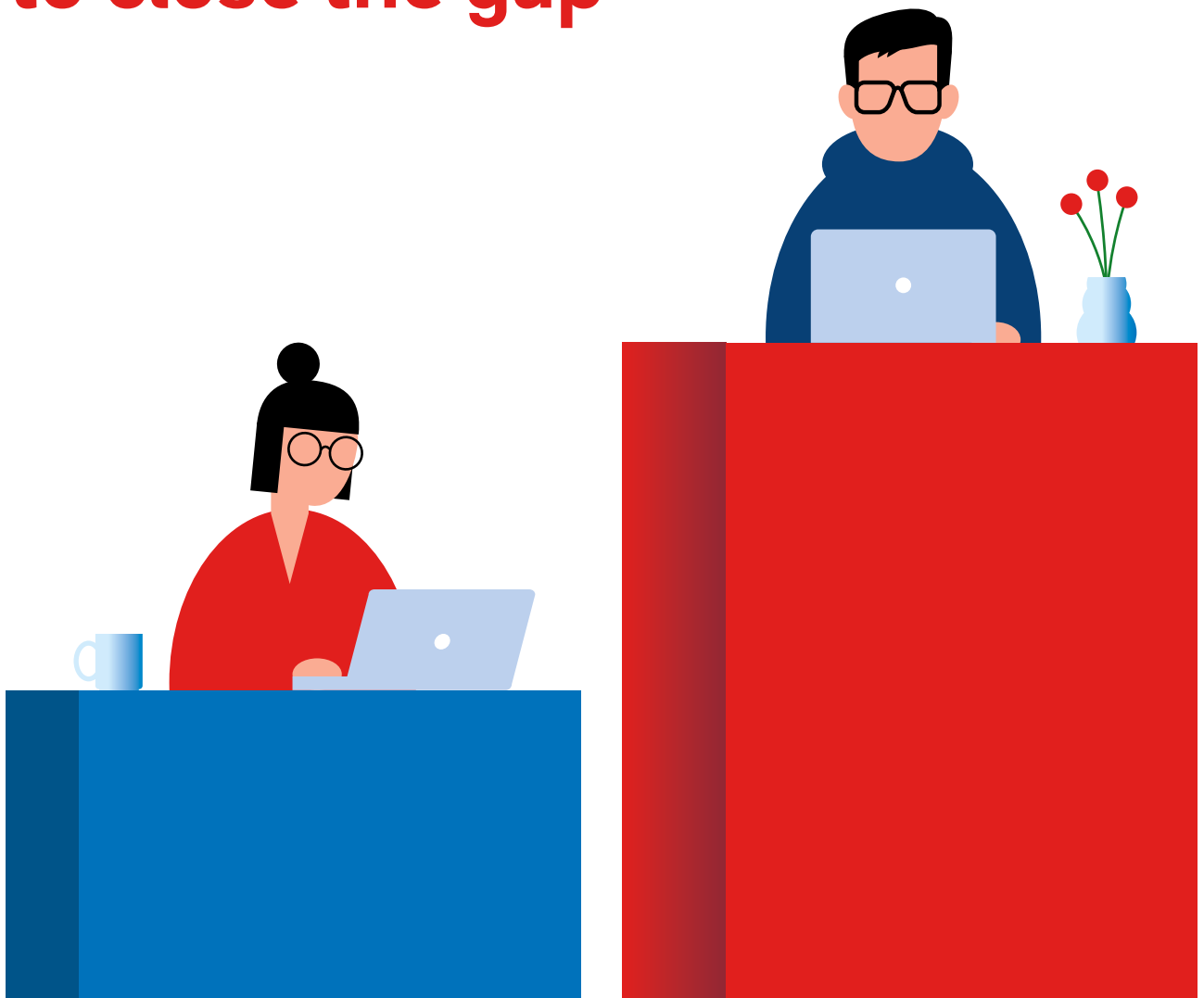


# Gender diversity in German and French startups

## Still a long way to go to close the gap



Technical  
University  
of Munich



On behalf of Roland Berger Foundation  
for European Management  
(Roland Berger Stiftung für europäische  
Unternehmensführung)

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# Foreword

For many companies, diversity is part of their identity. They see the interplay of different cultures and perspectives not only as an obligation because it fulfills their demand for fairness but as an enrichment. When people from different backgrounds work together, more and better things can emerge: more innovation, better networks, more sustainability. In diverse teams, people with their varied profiles, talents, and perspectives learn from each other – at all levels up to the management team. The entire company can benefit as diversity improves the firm's performance, increases its competitiveness, and expands its abilities to deal with crises. Thus, diversity is a must for companies and lagging behind on diversity can be expensive.

In a significant group of companies, the topic of diversity has been addressed comparatively little so far. Startups are among the most important drivers of innovation and growth in our economy. The link between their success and their funding has – rightly – been intensively studied, in relation to corresponding demands on investors and policymakers. But how startups are positioned in terms of the diversity of their founders and employees, and what the relationship is to business success, is still largely unexplored.

Diversity, Equity, and Inclusion (DEI) research has so far mainly focused on corporate settings and DEI research in entrepreneurship has not been studied with the same level of detail. Therefore, this study seeks to contribute to our understanding of DEI in entrepreneurship by providing a detailed overview of diversity statistics in German and French startups. This study raises awareness of the lack of diversity

This study attempts to shed light on diversity in startups. In doing so, it singles out gender diversity from among the numerous aspects of diversity – a topic that has often been discussed in connection with large companies and the composition of their supervisory and management boards but almost never in connection with startups.

The study compares the situation in Germany with that in France, the two largest countries in the EU, which have a vibrant and growing startup scene. Particularly important is that the study goes beyond a mere description of the status quo of diversity in startups. It also looks at the background to why diversity in startups has not yet progressed as far as would be desirable and it makes recommendations on how the current state can be improved.

The Roland Berger Foundation for European Management supported the Chair for Strategy and Organization at the Technical University of Munich in the creation of the study with great conviction. We see the study as an important contribution to exploring the topic of diversity in one of the most significant groups of companies and to advancing the discussion on how startups can increase their diversity.

**Felicitas Schneider, Per Breuer**

Management Board, Roland Berger Foundation  
for European Management (Roland Berger Stiftung  
für europäische Unternehmensführung)

in startups and seeks to inspire future research addressing diversity aspects in entrepreneurship. Furthermore, this study seeks to serve as a starting point for decision makers such as entrepreneurs, venture capitalists, and policymakers. We would like to thank the Roland Berger Foundation for European Management who supported this research generously and made this study possible.

**Dr. Theresa Treffers, Lukas Heidegger,  
Prof. Dr. Isabell Welpe**

Chair for Strategy and Organization,  
Technical University Munich

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# Introduction

**Startups are an engine for growth, employment, and competition in every modern economy. They are full of fresh ideas, use new technologies, and create cutting-edge business models, enabling them to come up with disruptive innovations, attract investments, and create many new jobs. In contrast to corporates, which are often subject to rigid and slow bureaucratic processes and structures, startups act more flexibly and with agility. However, startups are not innovative alone: they also drive innovation in corporations through cooperation, acquisitions, and by challenging corporates' current business models by fostering competition. Startups are thus essential for all economies, and it is important to understand how to create and foster them.**

Despite startups' crucial role, it appears that startups and the startup scene neglect a large proportion of their innovative potential: women. Although women account for more than half of the world population, they appear to be significantly underrepresented in positions of power and technical industries. In fact, starting a new venture appears to be a male-dominated business, with women being significantly less likely to start their own venture and raise funds for their venture. This is surprising given that 700+ startup founders, investors, and employees in Europe have expressed their concerns in an open letter to policymakers about a lack of skilled founders, co-founders, and employees (<https://www.notoptional.eu/>). Studies estimate that sourcing a more diverse workforce could, to a large extent, compensate for the lack of skilled workers and take account of the aging population. Therefore, it makes sense to take a closer look at current diversity developments in the startup scene.

This study seeks to put numbers to mere assumptions and examines the gender diversity in German and French startups. Germany and France are the largest economies in the EU and are important partners in many political and economic spheres. They have a longstanding history together and share a close relationship. Although the

UK is the biggest country in the EU in terms of venture funding, Germany and France take second and third place, making them very attractive for startups and venture capitalists. Handelsblatt reports in February 2022 that Berlin counts only one startup per 878 inhabitants, while Paris counts one startup per 270 inhabitants. However, both cities are on a par in terms of unicorns, with Paris hosting 19 unicorns and Berlin having 18 unicorns (Stiens et al. 2022). There are some recent prominent examples of female founders in Germany such as Kristine Zeller and Kati Ernst from Ooshi, Ina Remmers from nebenan.de, and Anne Kjaer Riechert from ReDI (School of Digital Integration), and in France such as Julie de Pimodan from Fluicity, Julia Bijaoui from Frichti, and Raphaëlle Covilette from Kokoroe. But are these just isolated examples or is the startup scene really as diverse as it could be?

Our analyses are based on data from Dealroom and LinkedIn. Using Dealroom data, we identified 708 German and 1,016 French startups that received at least seed funding, and were founded between 2012 and 2016 by 1,063 German and 1,535 French founders. We chose the funding range between 2012 and 2016 to ensure homogeneity in terms of the economic conditions and to minimize missing data points owing to the recency of startups. We analyzed data from these samples regarding founding team demographics and startup valuation and matched it with data from 34,893 German and 43,997 French employees on LinkedIn.

Besides providing numbers on the gender diversity of German and French startups in chapter 1, this study also illuminates the reasons that academia puts forward for the lack of diversity in startups in chapter 2. Scientific studies argue that stereotypes play a crucial role in the lack of female founders and that we are missing a filled pipeline of “STEM women” – in other words, women with an education in science, technology, engineering, or mathematics. In chapter 3, our analysis and scientific insights offer up several implications and recommenda-

tions on how founders, venture capitalists, and policy-makers can increase gender diversity in startup ecosystems. The end of the study provides a brief conclusion.

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**Startups and the startup scene neglect a large proportion of their innovative potential: women.**

1

**THE STARTUP  
LANDSCAPE IS  
MALE**

This chapter reports the results from our analysis of gender diversity of German and French startups in general and gender diversity across startup industries, startup technologies, and revenue models in particular. At the end of the chapter, we link the gender diversity of German and French startups with their valuation.

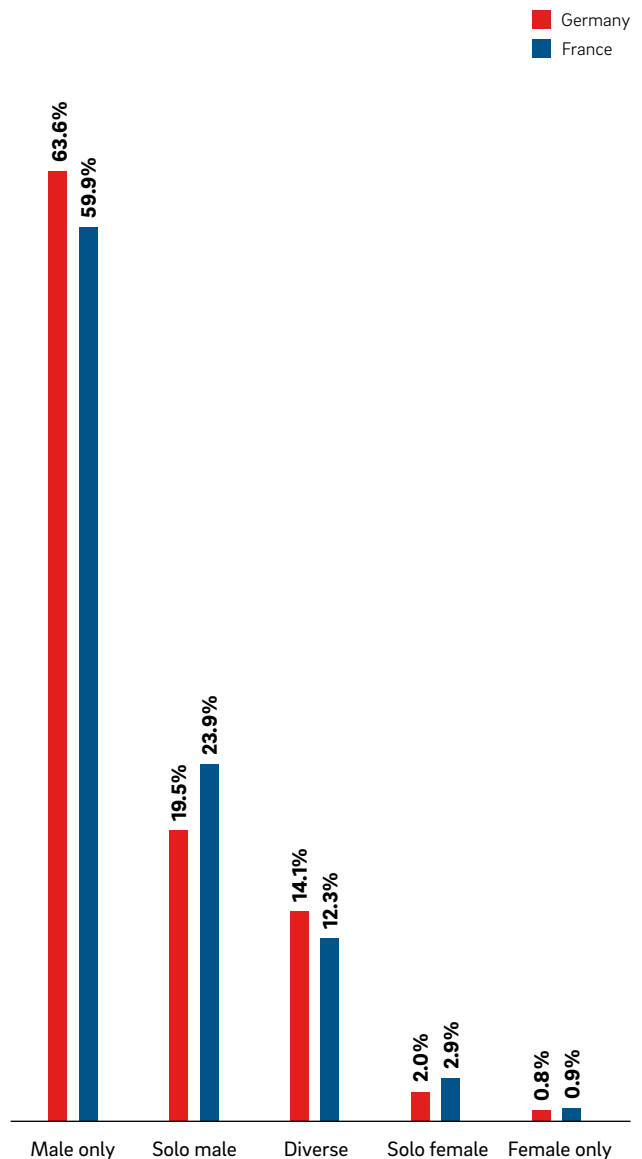
### 1.1 GENDER DIVERSITY OF GERMAN AND FRENCH STARTUPS

We first analyze the gender distribution of German and French founding teams, the gender distribution of the startup employees, and the number of employees across the gender distribution of founders.

Overall, the vast majority of founders (91%) and founding teams (82%) in Germany and France are male and this is identical in both countries. Looking separately at the gender distribution of founders in Germany and in France, we find that all-male founding teams or solo male founders account for more than 80% of all startups. → **A** Diverse founding teams account for the next largest share, whereas solo female founders or all-female founding teams remain the exception. But perhaps it is only the founders who are predominantly male, and the genders of startup employees are equally distributed?

The gender distribution of employees in German and French startups does indeed look a bit more equally distributed than that of the founders. Overall, more than 60% of employees in German and French startups are male and this distribution is equal for Germany and France. Hence, we report results for both countries in Figure → **B**. All-male founding teams and solo male founders have a bit more than one-third female employees, and diverse founding teams and solo female founders are close to equal in terms of the gender distribution of their employees. Interestingly, all-female founding teams have the most female employees, with 62% female employees. This percentage in all-female founding teams seems to mirror the proportion of male and female employees in all-male founding teams.

**A:** Gender distribution of founders



Source: Dealroom

Another question is how the gender distribution of founders relates to the number of employees in startups. In other words, are male or female founders or founding teams more successful in generating jobs, which is often seen as an indicator of startup growth and success? Our results in Figure → C illustrate that, on average, diverse founding teams have the most employees, with 81 employees, followed by all-male founding teams, with 62 employees, and solo male founders, with 47 employees; solo female founders and all-female founding teams have the least employees, with 36 and 27 employees, respectively.

We can conclude that startups are a very male-dominated business and that male founders and all-male founding teams have more male employees, while female founders have the most female employees, and that diverse founding teams have, on average, the most employees. But are there differences in these findings depending on the industries in which German and French startups operate?

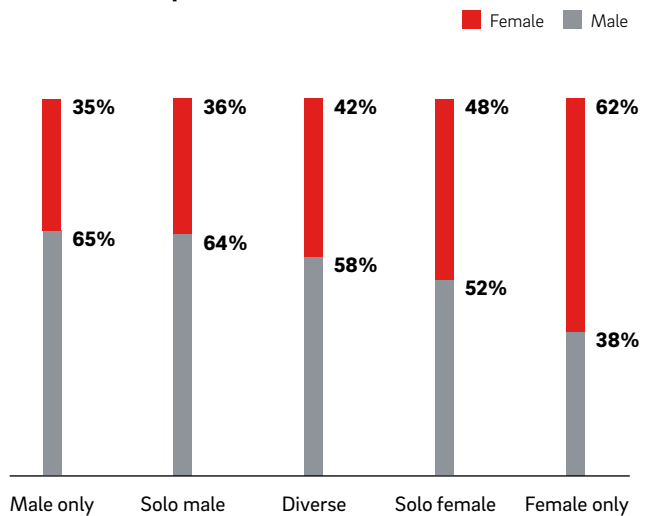
### 1.2 GENDER DIVERSITY AND INDUSTRIES OF GERMAN AND FRENCH STARTUPS

To start off with, the top three industries for German startups are fintech (15%), health (12%), and enterprise software (8%), whereas the top three industries for French startups are enterprise software (18%), health (12%), and transportation (11%). → D

We analyzed the gender distribution of German and French founders by industry and the gender distribution of employees in German and French startups by industry. Furthermore, we examined the total number of startup employees by industry and the average number of employees per startup by industry.

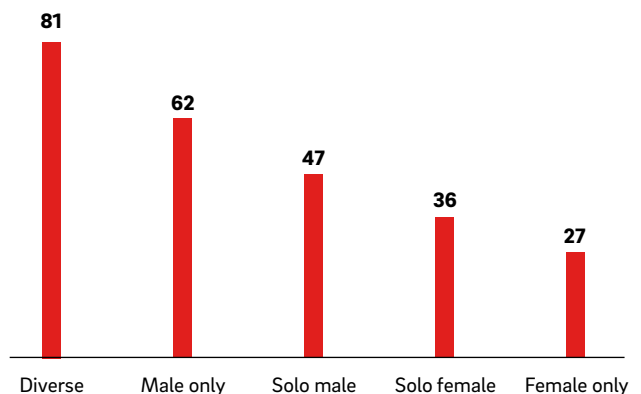
Looking at the gender distribution of German and French founders, female founders are significantly under-represented across industries. While some industries that are typically associated with female founders such as fashion, kids, or wellness and beauty rank among the top five industries, with around 20% female founders in both

**B: Gender distribution of employees in German and French startups**



Source: Dealroom, LinkedIn

**C: Average number of employees in German and French startups across gender distribution of founders**



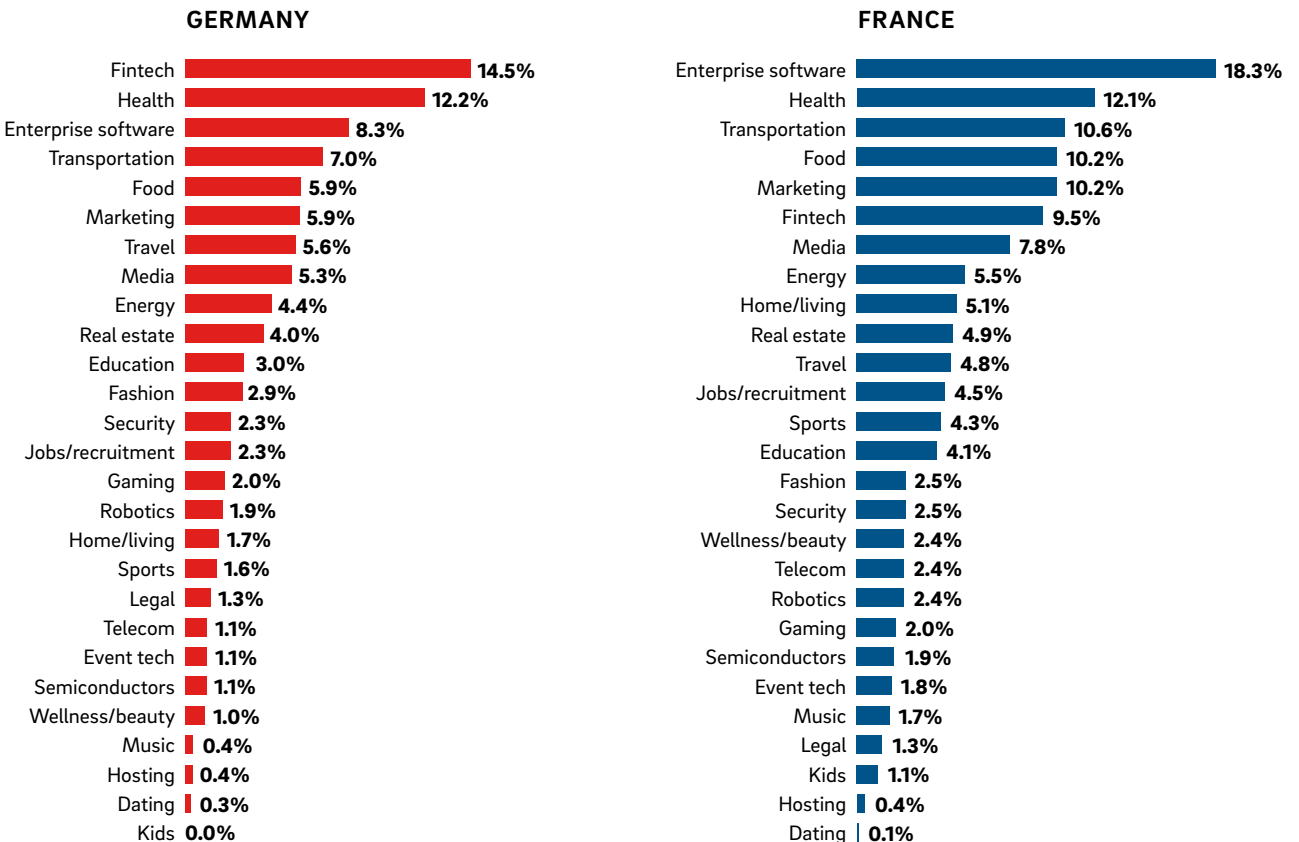
Source: Dealroom, LinkedIn



countries, there are some striking differences in the industries for German and French founders: Whereas dating and telecom rank among the top five industries, with 50% and 18% female founders in Germany, respectively, they are the bottom placed industries for French founders. → E

The gender distribution of employees in startups looks similar, with only the fashion and education industry in Germany and wellness/beauty and fashion in France employing slightly more women than men. → F

**D: Industries of startups**



Source: Dealroom

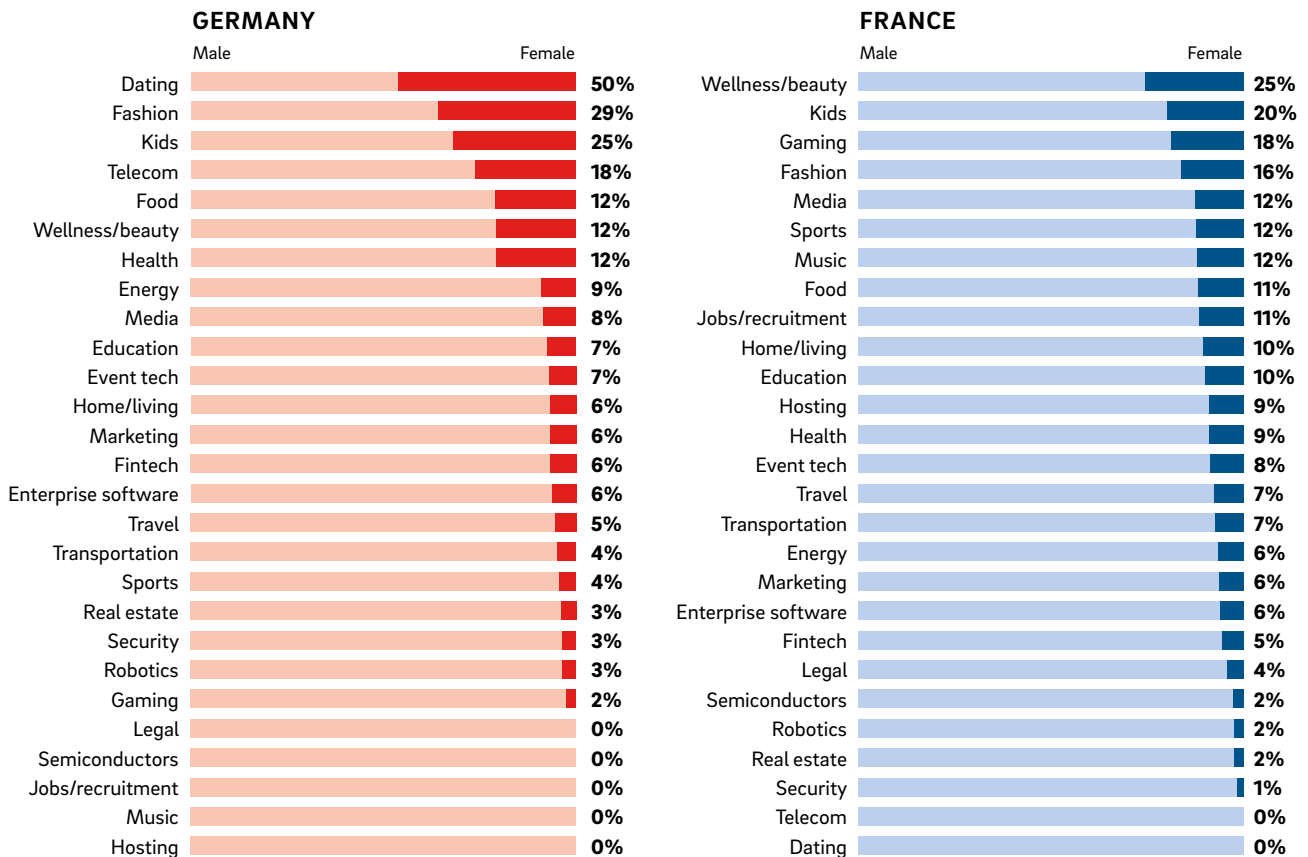
Multiple industries per startup were possible.

## 10 Gender diversity in German and French startups

Looking at the top three industries that German and French startups operate in, women are underrepresented as founders and as employees in all three industries in both countries. In Germany, there are only 6% female founders and 33% female employees in the fintech in-

dustry, 12% female founders and 44% female employees in the health industry, and 6% female founders and 28% female employees in the enterprise software industry. In France, there are only 6% female founders and 32% female employees in the enterprise software

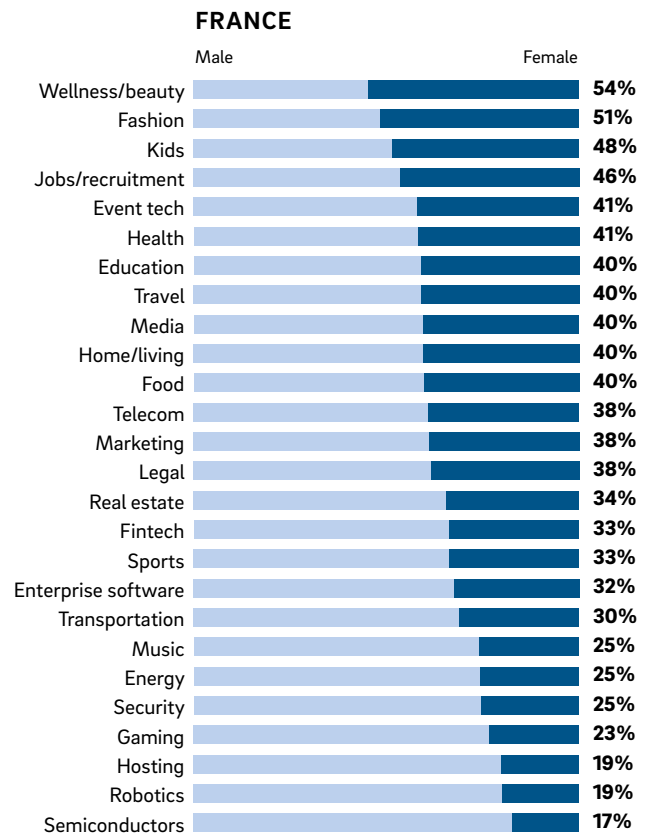
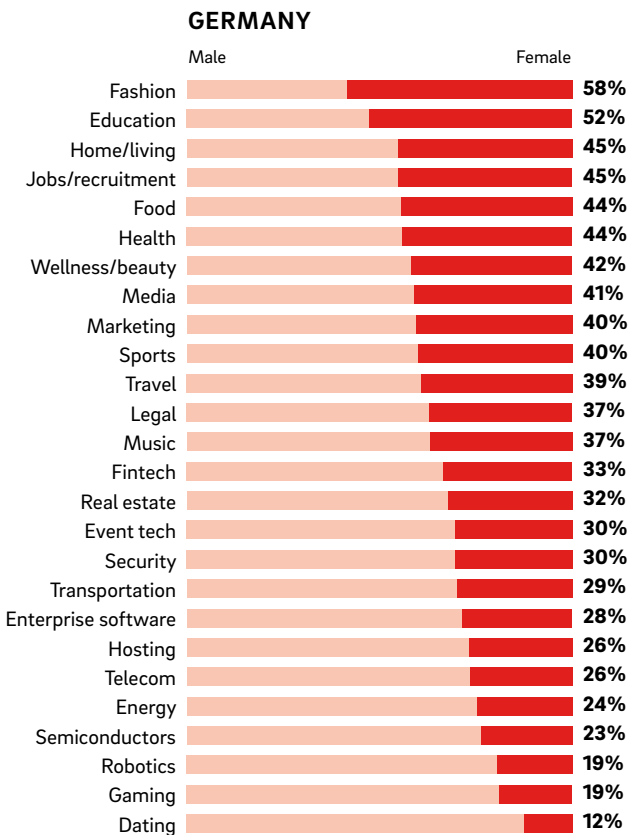
### E: Gender distribution of founders by industry



industry, 9% female founders and 41% female employees in the health industry, and 7% female founders and 30% female employees in the transportation industry. So, do female-dominated or male-dominated startup industries have more employees?

The picture with regard to the total number of employees by industry is pretty clear: → **G** The industries with the most startups roughly have the most employees, and these are the industries where men found their startups. In Germany, the fintech industry has the most employees

**F: Gender distribution of employees in startups**



Source: Dealroom, LinkedIn

Multiple industries per startup were possible.

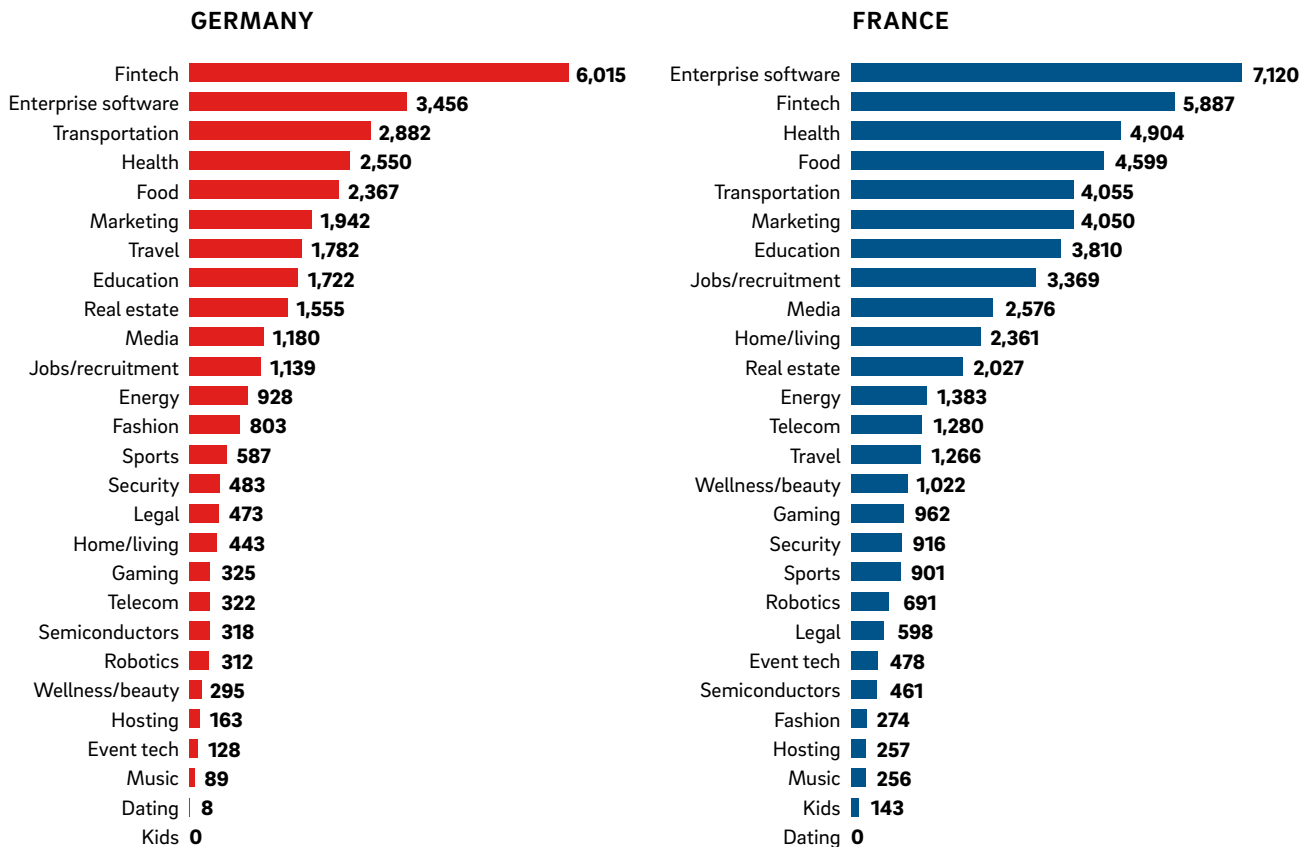
## 12 Gender diversity in German and French startups

in startups, with more than 6,000 employees, followed by the enterprise software industry, with about 3,500 employees, and transportation, with about 2,900 employees. In France, the startups in the enterprise software industry have around 7,100 employees, in the fintech

industry about 5,900 employees, and in the health industry about 4,900 employees.

Looking at the average number of employees in startups by industry → [H](#), we find that education startups employ the most people, with 82 and 93 employees in

### G: Total number of startup employees in startups by industry

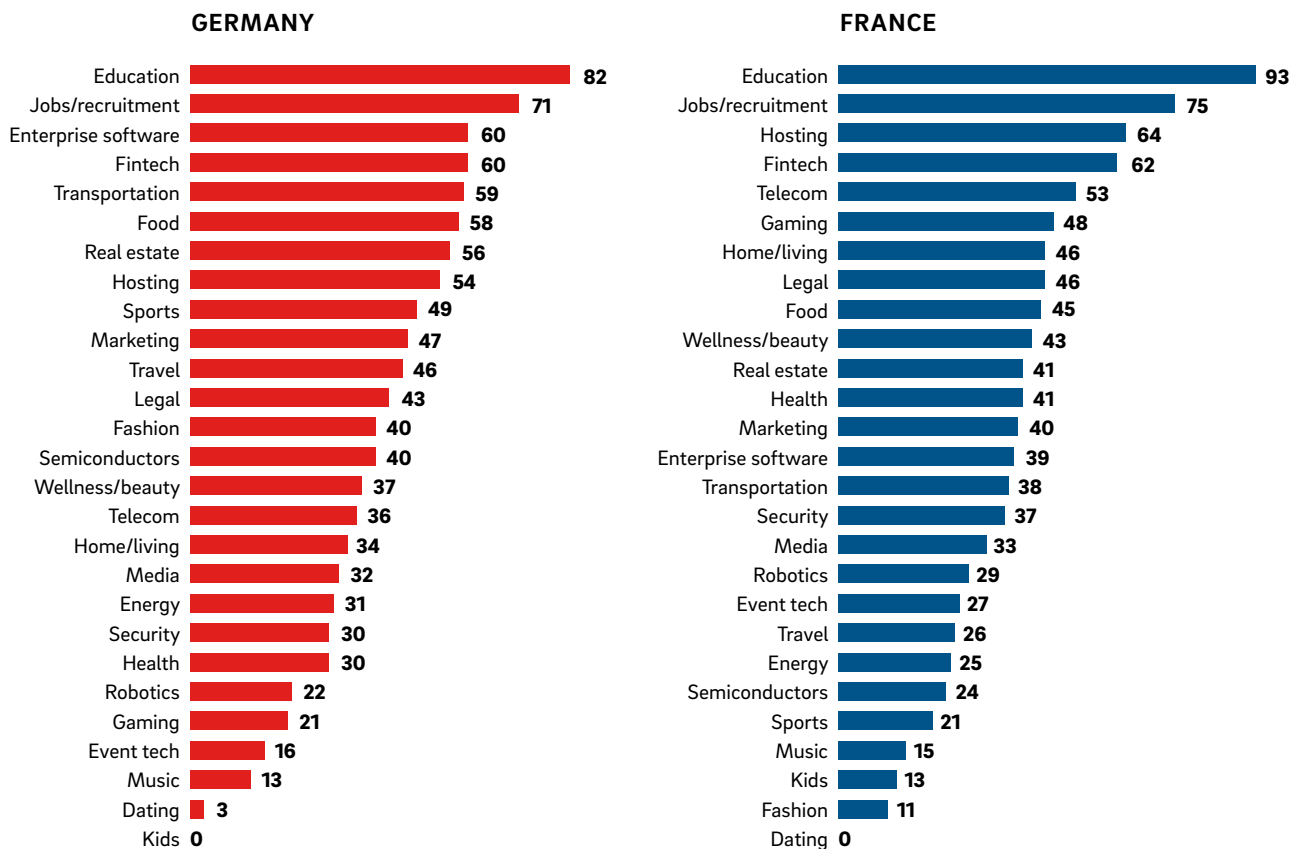


Germany and France, respectively, and jobs/recruitment startups have 71 and 75 employees in Germany and France, respectively. While German startups in the fintech, enterprise software, and transportation industry rank among the top five for average number of employ-

ees, French startups in these industries fare in the middle ranks for average number of employees.

Overall, most German and French startups operate in very similar industries, but there are some striking differences in the industries where German and French women

**H: Average number of employees in startups by industry**



Source: Dealroom, LinkedIn

Multiple industries per startup were possible.

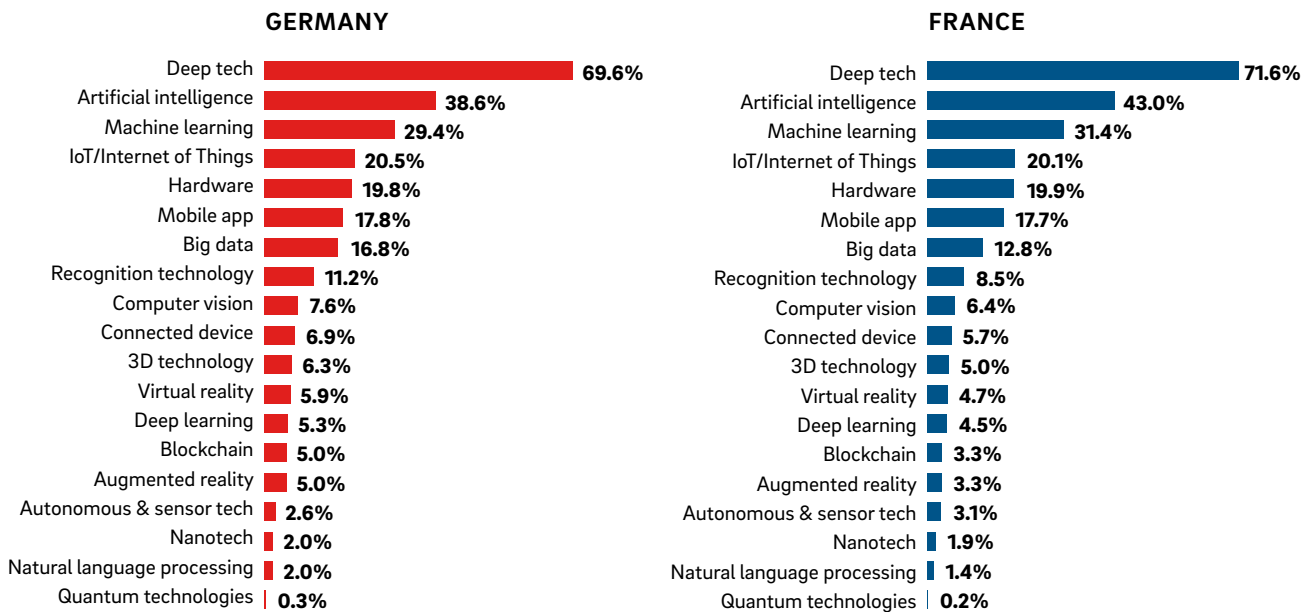
found their startups and where most women are employed in startups. In both countries, however, women are under-represented as founders and as employees across all industries. Unsurprisingly, the industries where most German and French startups are founded, and which are male dominated, have most employees in absolute terms, but the industries where startups have on average the most employees per startup are education and jobs/recruitment in both countries. Even in the education and jobs/recruit-

ment industries, the representation of female founders is no higher than 10%.

### 1.3 GENDER DIVERSITY AND TECHNOLOGIES OF GERMAN AND FRENCH STARTUPS

Similar to our analysis about startup industries, we analyzed the technologies that German and French startups use and how the technology used is linked to the gender distribution of founders and their employees. As

#### Technologies used in startups



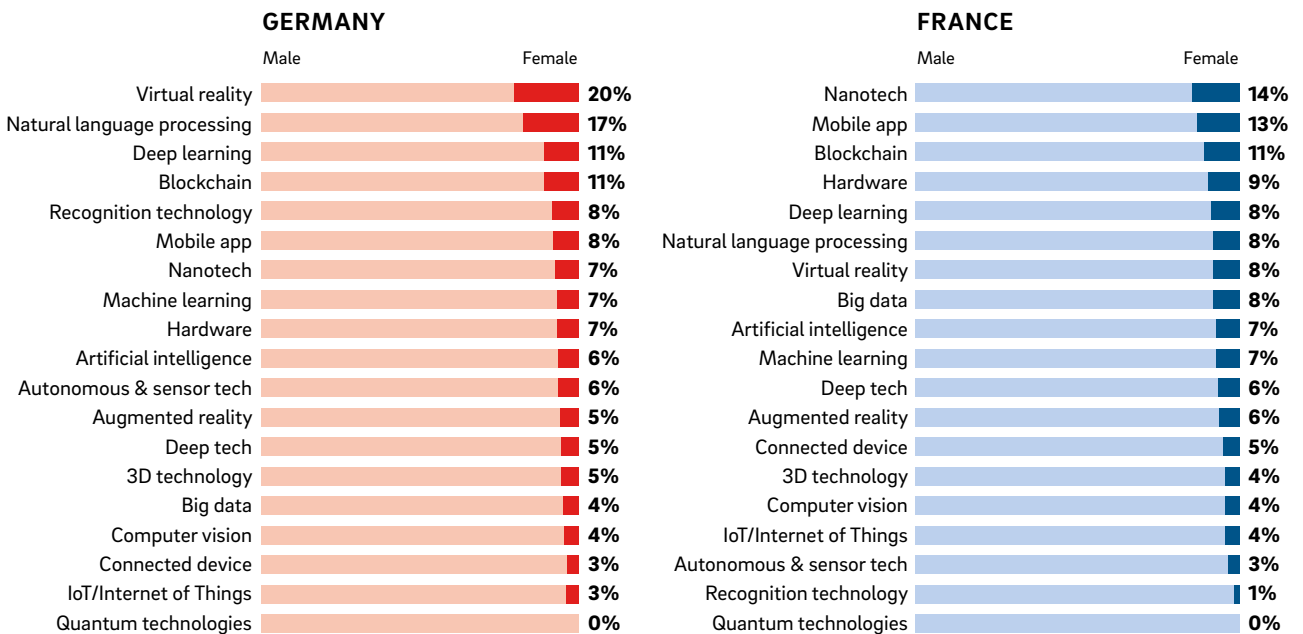
for startup industries, we again illustrate the total number of startup employees by technology and the average number of employees per startup by technology.

Most German and French tech startups are based on deep tech (70%), followed by artificial intelligence (40%) and machine learning (30%). →! According to Dealroom's latest deep tech report 2021, deep tech startups are characterized by having high R&D risk and high product-market risk. Dealroom estimates the combined value of Eu-

ropean founded deep tech companies at nearly EUR 700 billion and growing. Startups categorized under artificial intelligence use machine learning, computer vision, or natural language processing but were also able to explicitly (and additionally) indicate machine learning as a technology used.

Technology use may also be related to the representation of women in these startups as founders and employees. In Germany, female tech founders are mainly

**J: Gender distribution of founders by technology**



Source: Dealroom

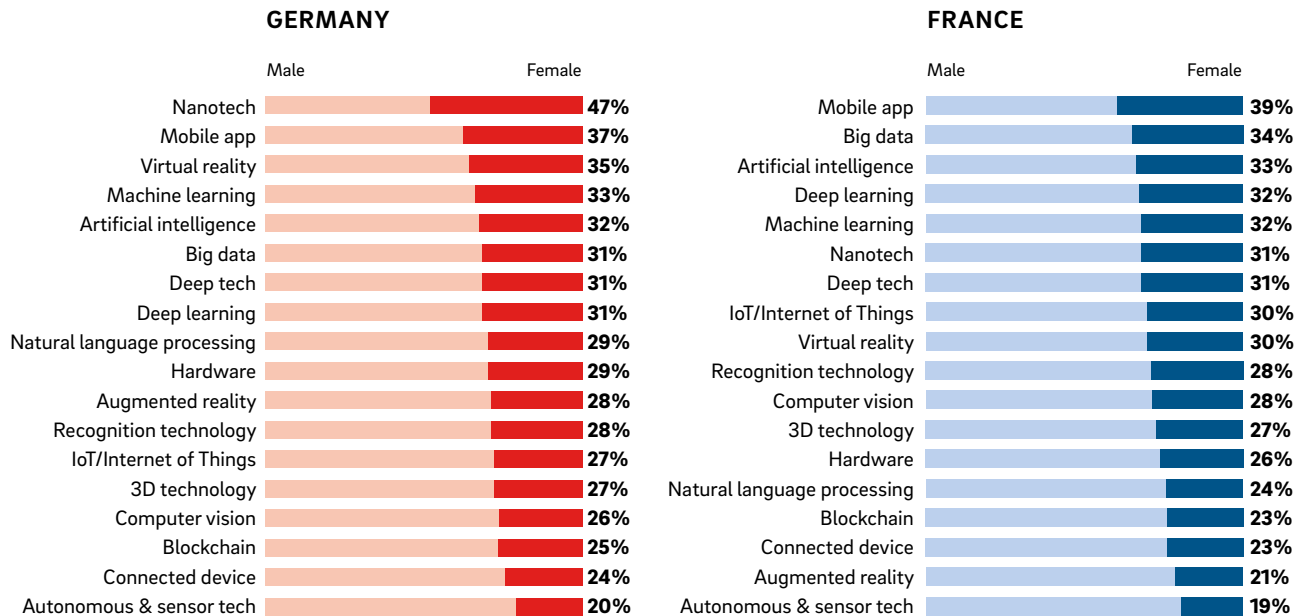
Multiple technologies per startup were possible.

represented in startups using virtual reality (20%), natural language processing (17%), and deep learning and blockchain (both 11%). In France, female tech founders are mainly represented in startups using nanotech (14%), mobile app (13%), blockchain (11%), and hardware (9%). In both countries, only up to 7% of deep tech, artificial intelligence, and machine learning startups are founded by women, and these are the technologies around which most startups are founded. → J

Looking at the gender distribution of startup employees by technology, we see that only nanotech startups in Germany have nearly equal gender distribution among their employees. In all other tech startups, women are the minority among employees, ranging between 20% and 40%. → K

Unsurprisingly, startups in deep tech, artificial intelligence, and machine learning have the highest total number of startup employees. → L In Germany (France), deep tech startups have almost 8,900 (10,000) employees,

**K: Gender distribution of startup employees by technology**



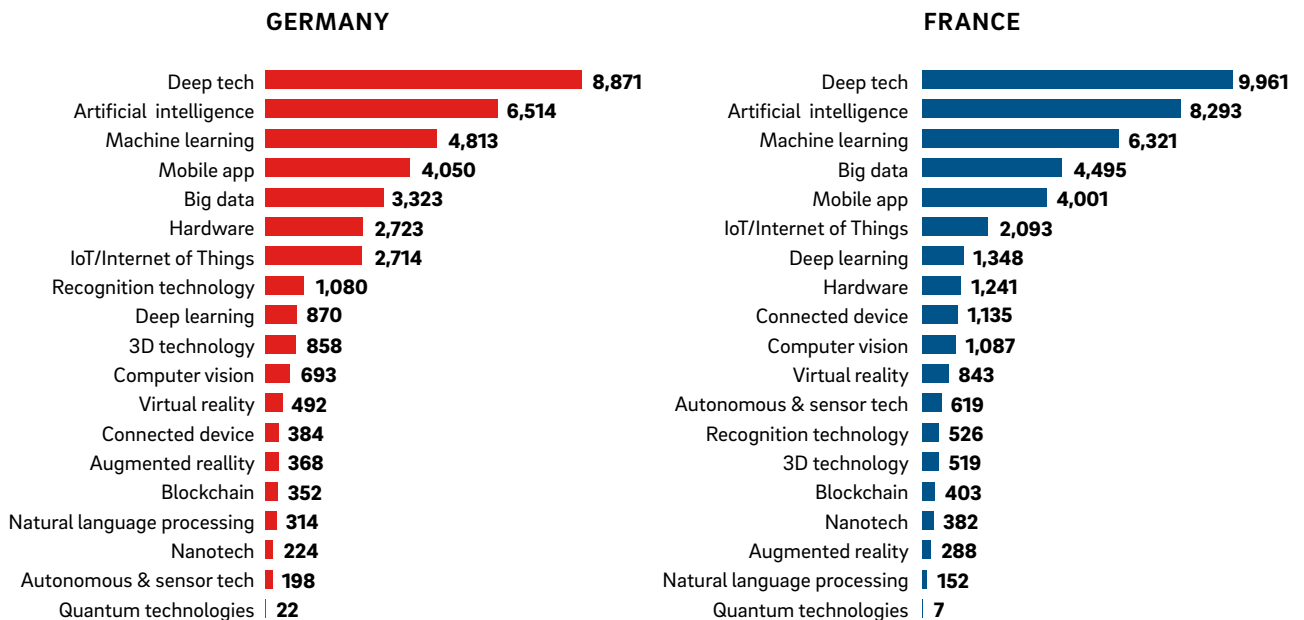


followed by artificial intelligence startups with about 6,500 (8,300) employees and machine learning startups with more than 4,800 (6,300) employees. German tech startups that have a high percentage of female founders, such as those in virtual reality and natural language processing, rank in the lower third for total number of startup employees. French tech startups that have a high percentage of female founders, such as those with mobile app as a technology, rank in the top five for total number

of employees, but nanotech or blockchain rank in the lowest quarter.

Looking at the average number of employees per startup by technology → [M](#), we find that mobile app startups in Germany have the most employees (68), followed by big data startups (62) and deep learning startups (58). Startups using virtual reality, which are mostly founded by women, rank in the lower third for average number of employees per startup. In France, deep learning start-

### L: Total number of startup employees by technology

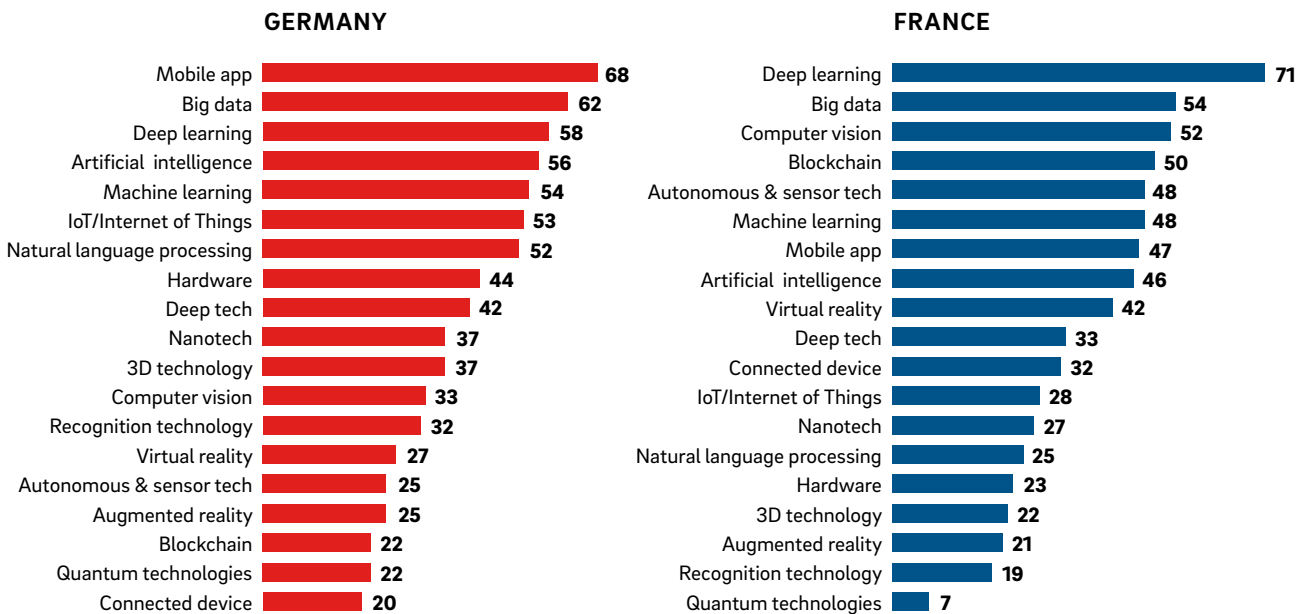


ups have on average the most employees (71), followed by big data startups (54) and computer vision startups (52). Several tech startups in France in which female founders are engaged, such as mobile app and blockchain startups, rank in the upper half for average number of employees per startup.

In sum, looking specifically at tech startups, we see that tech startups are even more male dominated than other startups. Female tech founders in Germany and in

France are only represented in very few tech startups to a maximum of 20%, but in most tech startups, they make up a single-digit percentage of the founders. In addition, employees in tech startups are also predominantly male in both countries. Finally, we find that startups that are represented in the top three technologies in both countries also employ the highest total number of employees and rank in the upper half for average number of employees per startup.

**M: Average number of employees per startup technology**



#### 1.4 GENDER DIVERSITY AND REVENUE MODELS OF GERMAN AND FRENCH STARTUPS

As for industries and technologies, we examine the revenue models that German and French startups are based on and how the different revenue models relate to the gender distribution of founders and their employees. For revenue models, we also illustrate the total number and the average number of startup employees by revenue model.

SaaS describes a method of software delivery and licensing in which software is accessed online via a subscription rather than bought and installed on individual computers. Marketplace & e-commerce is defined as a place that connects buyer(s) and seller(s) where goods or services are bought, sold, or exchanged. Manufacturing describes the production of goods, by hand or by machine, that upon completion are sold by the startup.

Nearly half of both German and French startups use the SaaS revenue model. More than 30% of startups are built more on marketplace & e-commerce revenue models (36% in Germany vs. 31% in France) and a bit less on manufacturing revenue models (27% in Germany vs. 31% in France). → **N**

Looking at the gender distribution of founders by revenue model → **O**, we see that the distribution is nearly identical for Germany and France. There are only between 6% and 11% female founders for all revenue models, and most female founders base their startups on the marketplace & e-commerce revenue model.

As expected, startups that are based on SaaS have the most employees in absolute terms → **P**, but interestingly, startups that are based on marketplace & e-commerce, where female founders and female employees are relatively strongly represented, have the highest number of employees per startup. → **Q** In total numbers, SaaS startups have the most employees (about 13,100 in Germany and 18,800 in France), followed by marketplace & e-commerce (about 11,500 in Germany and 12,800 in France) and then manufacturing (about 4,400 in Germany and 4,900

in France). On average, startups with marketplace & e-commerce as their revenue model have the most employees (62 in Germany and 60 in France), followed by SaaS (52 in Germany and 58 in France) and then manufacturing (32 in Germany and 23 in France).

Looking at the gender distribution of employees in German and French startups → **R**, we find that most female employees work in startups with marketplace & e-commerce as their revenue model (41% in Germany, 42% in France), followed by SaaS (34% in Germany, 35% in France) and then manufacturing (32% in both countries).

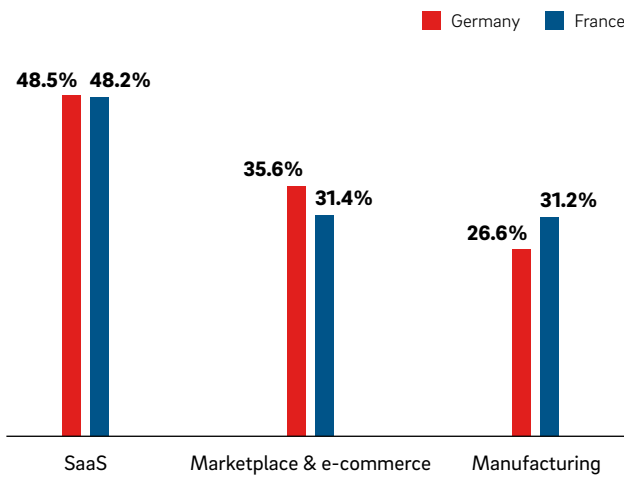
In sum, female founders and female employees are significantly underrepresented in all revenue models that startups are based on. They are particularly underrepresented in the SaaS revenue model on which most startups are based. Furthermore, although SaaS startups have the most employees in absolute terms, marketplace & e-commerce startups, in which the most female founders and female employees are represented, have the most employees per startup.

#### 1.5 GENDER DIVERSITY AND STARTUP VALUATION OF GERMAN AND FRENCH STARTUPS

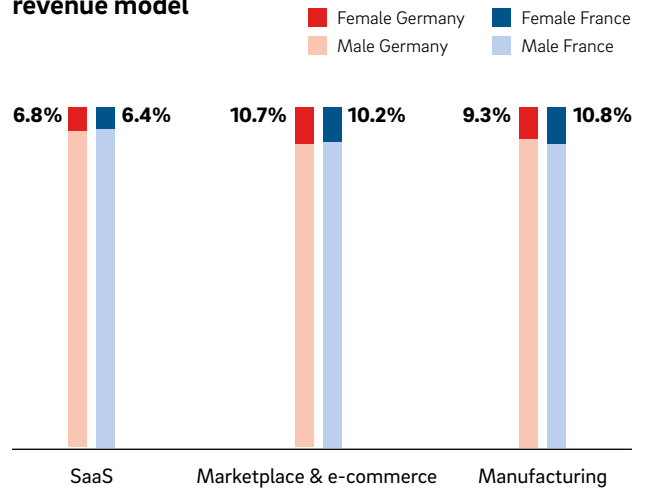
Now that we know that in both countries women are generally underrepresented as founders as well as employees in startups and are consequently underrepresented in all industries where startups are founded, in all technologies that startups use, and in all revenue models that startups are based on, there is the question of whether the gender distribution of founders is related to startup valuation. Noteworthy exceptions to the above-mentioned female underrepresentation are startups in the fashion, wellness, and beauty industries, which employ a little more than 50% women.

If we start by looking at the average valuation of German and French startups, we find that German startups have a significantly higher mean valuation, at USD 117 million (M), than French startups, at USD 56 M. The median

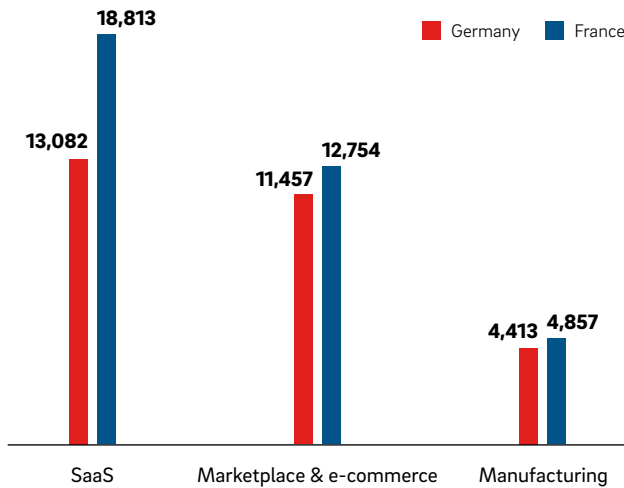
**N: Revenue models of startups**



**O: Gender distribution of founders by revenue model**



**P: Total number of startup employees by revenue model**



**Q: Average number of employees by revenue model**

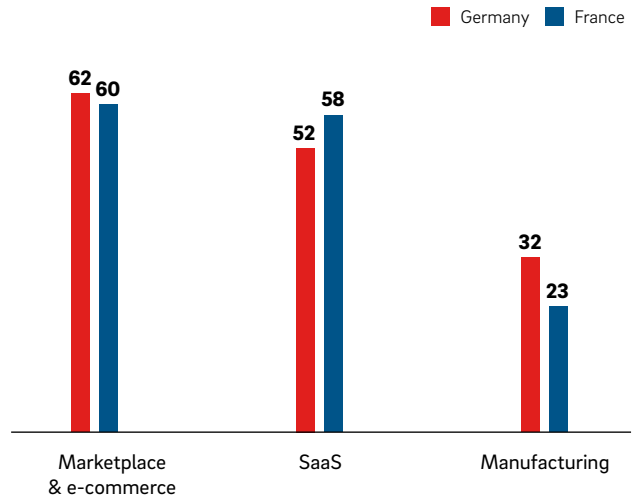


Fig. N, O, P, Q: Multiple revenue models per startup were possible.  
 Fig. N, O, P: Information about the revenue model was not available for all startups.

Fig. Q: The low number of employees per manufacturing startup could be due to the lower representation on LinkedIn.

values, which are less affected by outliers and skewed data than the mean values, also show that German startups have a higher valuation, at USD 17 M, than French startups, at USD 10 M. This difference in startup valuation is likely due to the fact that the German startup and VC landscape is more mature and that there are more and, hence, larger rounds in the later stages. However, analysts predict that this might change soon: They observe that VC money deployed in France is increasing and predict more later-stage funding, IPOs, exits, and unicorns in France in the next few years.

Taking a closer look at the relationship between gender distribution of founders and valuation of German startups, we find the highest median startup valuation for all-male (USD 21 M) and diverse (USD 20 M) founding teams. Startups by solo male founders, at USD 11 M, are valued at only half that of startups by male and diverse founding teams. Startups by solo female founders (USD 8 M) and all-female founding teams (USD 6 M) achieve the lowest median valuations. → [S](#)

In France, startups by all-male founding teams also achieve the highest valuation, at USD 14 M, followed by startups by diverse founding teams, at USD 10 M, and solo male founders, at USD 8 M. As in Germany, French startups by solo female founders, at USD 5 M, and by female founding teams, at USD 4 M, achieve the lowest median valuation. → [S](#)

Looking back to Figure C, these findings indicate that having more startup employees is related to having a higher startup valuation. In particular, median startup valuation appears to be proportionally related to the average number of employees by gender distribution of founders.

Another question is whether startup valuation is generally related to the number of founders. Noting that the valuation of German startups is higher than that of French startups, our analysis clearly illustrates that startup valuation is proportionally linked to the number of founders. Startups with one founder have the lowest valuation, at USD 11 M for German and USD 8 M for French

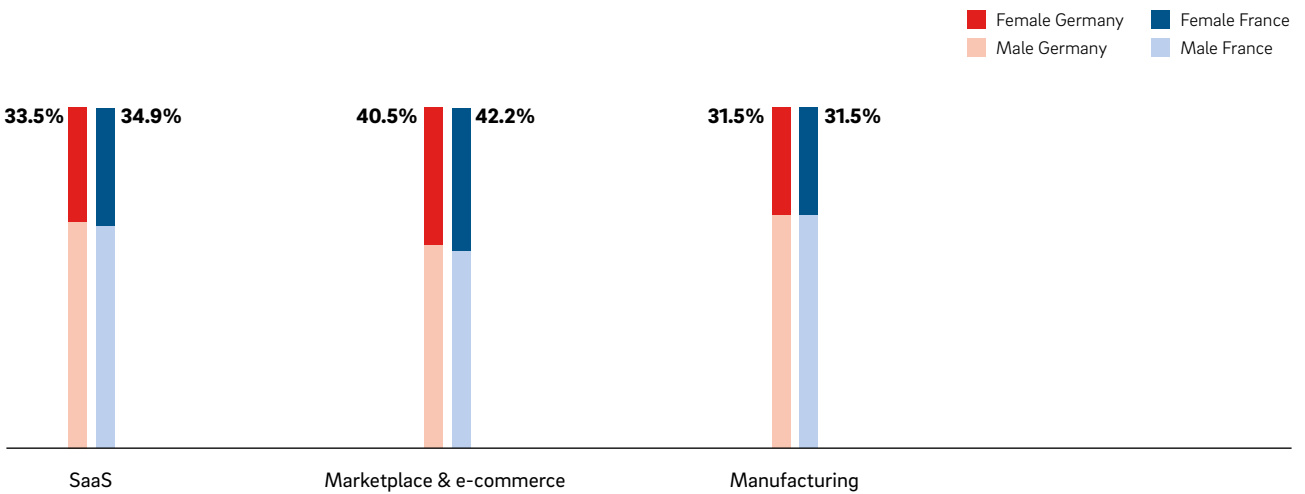
startups, and startups with four founders have the highest valuation, at USD 32 M for German and USD 20 M for French startups. → [I](#)

A deeper look at the valuation of German and French startups by industry, technology, and revenue model reveals further noteworthy insights. The highest median valuation for German startups is in the home and living industry, at almost USD 34 M, followed by those in hosting, energy, and health, all at about USD 30 M. In France, startups in the dating industry have the highest median valuation, at USD 25 M, followed by those in security, at USD 23 M, and health, at USD 20 M. → [U](#) In both countries, the industries in which startups have the highest valuation are male dominated, and women are underrepresented as founders as well as employees, except for the one male-founded dating startup in France that has only female employees. Interestingly, the industries in which most startups are founded (e.g., enterprise software, health) and where they have the highest total number of employees only rank in the upper third of startup valuations in Germany and in the upper half in France.

Exhibiting the median startup valuation by technology in Figure → [V](#), nanotech startups are valued highest in both countries, at USD 38 M in Germany and USD 30 M in France. In Germany, quantum technology startups fare equally high, at USD 38 M, followed by deep learning startups, at USD 31 M. In France, deep learning startups are valued at USD 23 M and natural language processing startups at USD 20 M. Although women are significantly underrepresented as founders across all tech startups in both countries, female founders in nanotech startups rank in the upper half across all tech startups and they even have the most female employees in Germany. In France, nanotech startups have the highest share of female founders and rank in the upper half for female employees. In Germany and in France, there are no female founders or female employees in quantum technology. In France, the share of female founders and female employees in deep learning ranks among the upper third. Remarkably, al-

## 22 Gender diversity in German and French startups

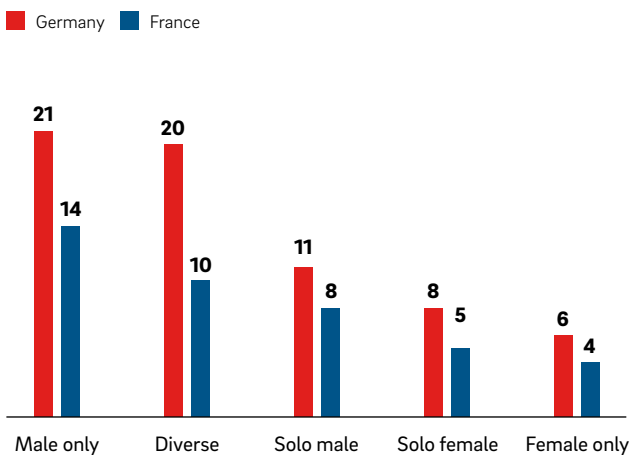
### R: Gender distribution of startup employees by revenue model



Source: Dealroom, LinkedIn

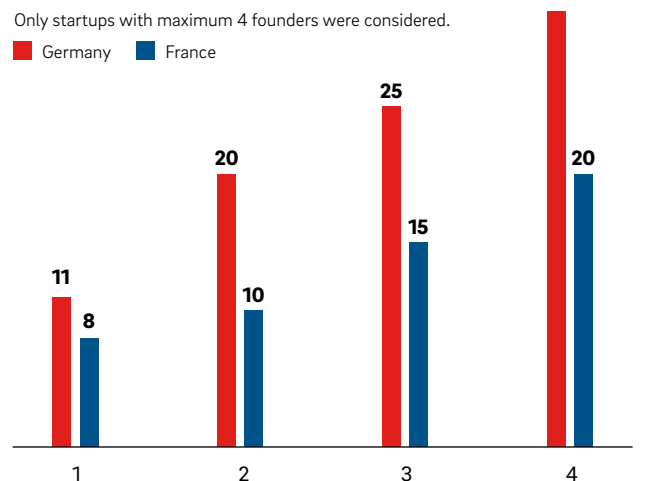
Multiple technologies per startup were possible.

### S: Median valuation of startups by gender distribution of founders [in M USD]



Source: Dealroom (Fig. S, T)

### T: Median startup valuation by number of founders [in M USD]

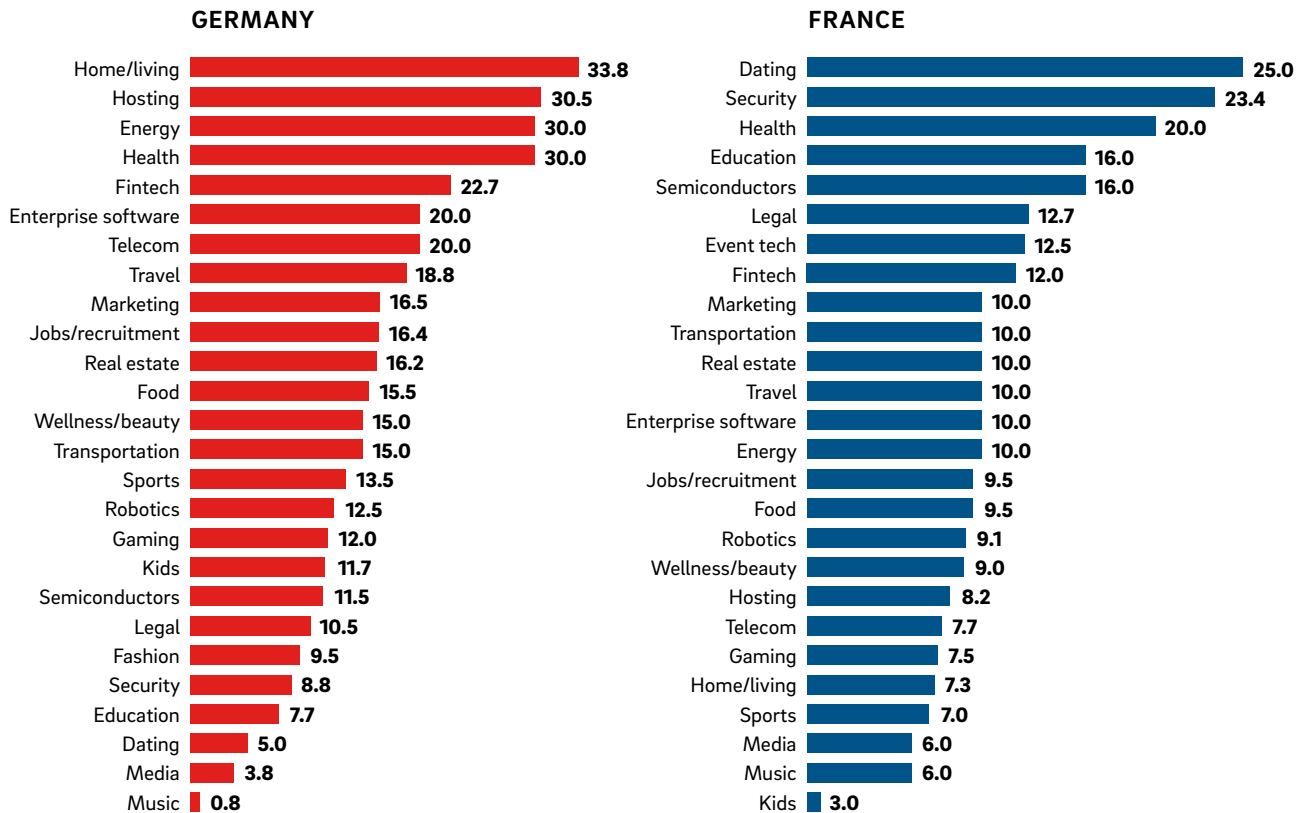


though most tech startups are founded in deep tech and these also have the highest total number of employees in both countries, they achieve only a relatively low valuation, at USD 19 M in Germany and USD 10 M in France.

Finally, we find that German startups that are based on marketplace & e-commerce revenue models have the highest valuation, at USD 25 M, followed by startups

based on SaaS, at USD 20 M, and then startups based on manufacturing, at USD 17 M. → [W](#) By contrast, French startups based on SaaS achieve the highest valuation, at USD 13 M, followed by manufacturing, at USD 12 M, and then marketplace & e-commerce, at USD 10 M. Although female founders and female employees are underrepresented in all revenue models, the largest share of female

**U: Median valuation for startups by industry [in M USD]**



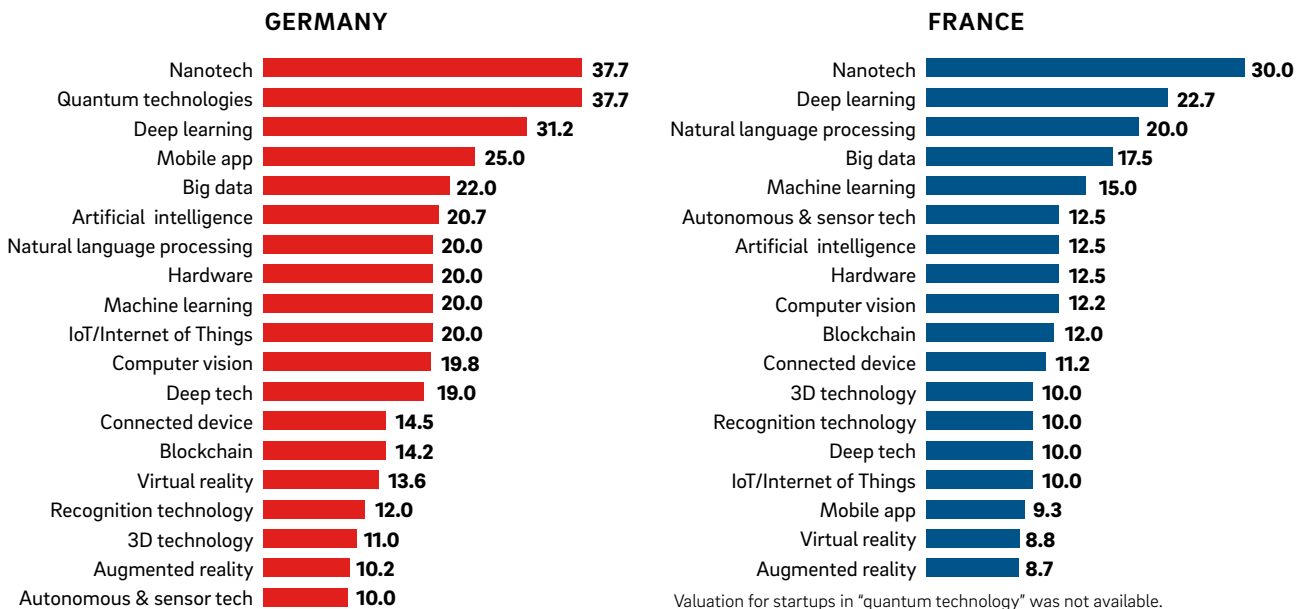
Source: Dealroom

Multiple industries per startup were possible.

founders and female employees in Germany can be found in startups with a marketplace & e-commerce revenue model. In France, SaaS startups have the lowest share of female founders and the second lowest share of female employees. Remarkably, although most startups in both countries are based on a SaaS revenue model and these startups have the highest total number of employees, they achieve only the second highest valuation in Germany.

To conclude, German startups are generally valued higher than French startups, but all-male and diverse founding teams achieve the highest valuation in both countries. In fact, startup valuation increases in proportion with the number of founders (max. four founders). When it comes to startup valuation by industry, we find that industries where most startups are founded and which have the highest total number of employees do not have the highest valuation. Still, those industries in which startups

**V: Median valuation for startups by technology [in M USD]**

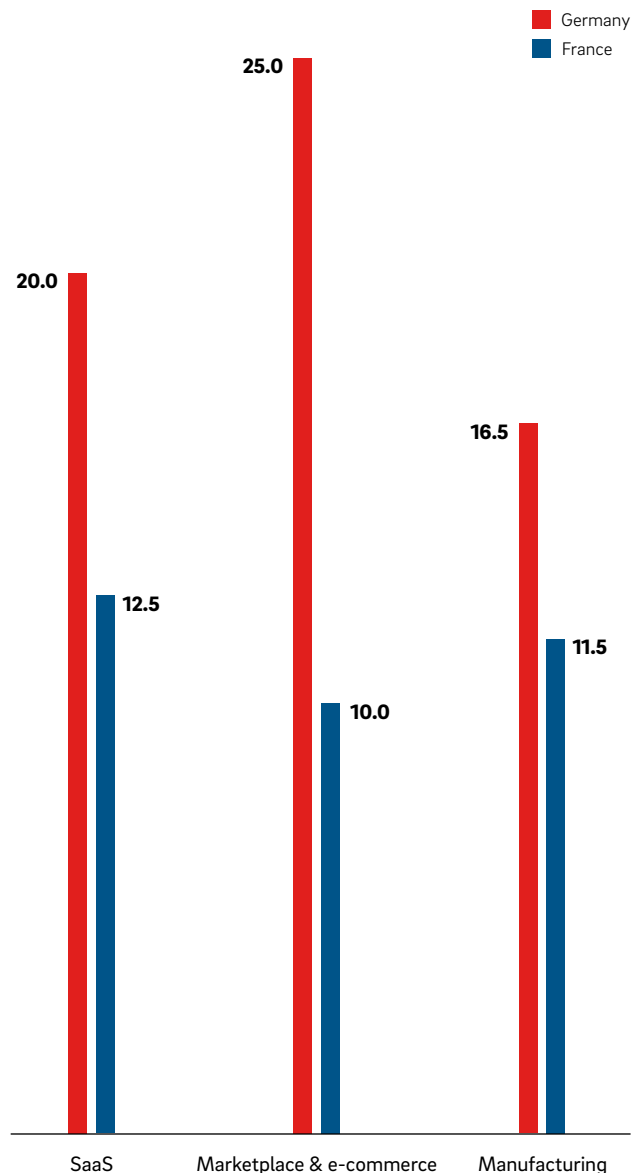


Valuation for startups in "quantum technology" was not available.



have the highest valuation are male dominated. Looking specifically at the valuation of tech startups, we observe that nanotech startups have the highest valuation in both countries and fare comparatively well in their share of female founders and female employees. However, we again find that the top three technologies in which startups are founded and which have the highest total number of employees in both countries achieve only a mediocre startup valuation. Lastly, startups based on marketplace & e-commerce revenue models, which have the highest relative share of female founders and female employees in Germany, have the highest valuation. By contrast, French startups based on SaaS achieve the highest valuation but have the lowest relative share of female founders and the second lowest share of female employees. Startups based on the SaaS revenue model, on which most startups are based and which have the highest total number of employees, achieve the highest valuation in France and the second highest valuation in Germany.

**W: Median valuation for startups by revenue model**  
[in M USD]



Source: Dealroom

Multiple revenue models per startup were possible.

# 2

## **SCIENTIFIC FOUNDATIONS OF THE GENDER GAP IN STARTUPS**

**Gender diversity is poor among founders and startup employees across all industries, technologies, and revenue models in Germany as well as in France. On top of that, startups by solo female founders and all-female founding teams are valued lowest in both countries compared to male and diverse founding teams. A more specific look at startup valuation by industry, technology, and revenue model reveals that industries in which startups have the highest valuation are male dominated, that nanotech startups, which fare comparatively well in their share of female founders and employees, have the highest valuation, and that startup valuation by revenue model relates to the share of female founders and employees to some extent. Still, the overall picture of gender diversity in German and French startups is concerning. This chapter therefore describes the reasons for this pervasive gender gap in startups from a scientific perspective.**

## **2.1 TYPICAL MALE, TYPICAL FEMALE: THINK STARTUP, THINK MALE!**

Scientific studies have put forward stereotypes or unconscious biases as the most important explanation for the lack of diversity in organizations. Stereotypical women are described using communal attributes such as warm, cooperative, emotional, or friendly, and are, in short, often described as warm. Stereotypical men are described using agentic attributes such as ambitious, analytical, competitive, or decisive, and are, in short, often described as competent. These gender stereotypes become problematic when important decision-makers such as founders, venture capitalists, or policymakers match them to the stereotype of a typical entrepreneur. Because stereotypical attributes of entrepreneurs largely correspond to the agentic and competent stereotype of men, stakeholders perceive a much better fit between the male and the entrepreneurial stereotypes than between the female and the entrepreneurial stereotypes. This perceived lack of fit leads to the erroneous conclusion that women are not

competent enough to be an entrepreneur, or if they are judged competent, they violate the female stereotype and are not perceived as very warm. These gender stereotypes are even more problematic in male-dominated organizations and industries in that female managers and founders are evaluated even more negatively in male-dominated organizations and industries than in female-dominated organizations and industries (Funk 2019).

Interestingly, both men and women perceive entrepreneurs to have characteristics similar to those of males, but only women also perceive entrepreneurs and females as having similar characteristics. Although men and women do not differ in their entrepreneurial intentions, those who perceive themselves as more similar to males have greater entrepreneurial intentions than those who see themselves as less similar to males (Gupta et al. 2009). In other words, women who perceive themselves as more masculine have greater intentions to start their own business than women who perceive themselves as more feminine.

Scientific studies have investigated the consequences of this perceived lack of fit among venture capitalists and showed that investors perceive a lower degree of fit between female founders and startups. Studies estimate that approximately 80% of investors believe that female founders receive either the right amount or more capital than their business models deserve. In fact, a US study reveals that investors underinvest in startups by female founders by a factor of five (Stanley 2018). Another recent study is more distinct in its analysis and shows that female-led startups catering to male-dominated industries receive significantly less funding at significantly lower valuations than female-led startups catering to female-dominated industries. By contrast, male-led startups attain similar funding and valuation outcomes regardless of the gender dominance of the industries to which they cater (Kanze et al. 2020).

These differences in investment can be traced back to a biased investment process and, hence, differences for male and female founders. For example, investors ask

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## Studies demonstrate that investors prefer pitches presented by male entrepreneurs compared to pitches made by female entrepreneurs, even when the content of the pitch is exactly the same.

female and male founders different questions, leading to different investment outcomes (Kanze et al. 2017, 2018). In particular, investors tend to ask male founders promotion-focused questions such as “where do you see this market going?”, i.e., inquiring about their motivation to achieve gains, focus on aspirations and ideals, and preference for approach strategies, while they ask female founders prevention-focused questions such as “what do you think it will take to break even?”, i.e., inquiring about their motivation to avoid loss, focus on obligations, and

preference for avoidant strategies. Founders tend to respond with a corresponding regulatory focus, resulting in significant differences in funding outcomes. Promotion-focused conversations, i.e., conversations between male founders and investors, result in significantly higher investments.

Other studies demonstrate that investors prefer pitches presented by male entrepreneurs compared to pitches made by female entrepreneurs, even when the content of the pitch is exactly the same. Moreover, attractive males were particularly persuasive, whereas physical attractiveness did not matter among female entrepreneurs (Brooks et al. 2014).

### 2.2 THE STEM PIPELINE IS LACKING WOMEN!

Another explanation that can, to some extent, account for the lack of gender diversity, particularly in tech startups, is the low number of women in science, technology, engineering, and mathematics (STEM). In fact, there are too few women working and studying STEM. While in most European countries, women represent a majority of all graduates from tertiary education, fewer women than men complete STEM university degrees. Eurostat.eu reports that a little more than 50% of all tertiary students are female, while in the STEM fields only about 30% of all STEM students are female. Knowing that most high-growth startups are tech startups, the pool of STEM women who could found tech startups is therefore significantly lower than in other fields. In addition, tech founders are limited in their choice of female co-founders because the pool of STEM women is small.

A study by Stoet and Geary (2018) found that across 67 countries and economies that participated in PISA 2015, girls performed similar to or better than boys in science in two out of three countries, and in nearly all countries more girls appeared capable of college-level STEM study than had enrolled. When analyzing the gender gaps by looking at each student’s “relative performance” or “strength” across reading and science in

school, they found that, compared to their all-subjects average, girls were stronger in reading in all countries, while boys were stronger in science in all countries. In other words, girls may be as good as boys in STEM, but they are likely even better than boys in reading. These differences may explain why boys are more likely than girls to choose STEM careers, even though the overall performance of girls and boys is similar: Students appear to choose their field of study based on their comparative strengths rather than on their absolute strengths. Furthermore, this study shows that the gender gap in favor of boys in terms of relative strength in STEM is greater in more gender-equal countries, and the proportion of women graduating with a STEM university degree is smaller. Although this may be counterintuitive, their analysis suggests that life-quality pressures in less gender-equal countries promote girls' and women's engagement with STEM subjects.

### **2.3 WOMEN ARE NOT DEFICIENT IN THEIR SKILLS!**

An explanation that has sometimes been put forward as an explanation for the underrepresentation of women in executive positions or other positions of power is that “women do not have what it takes” and are somehow deficient in their skills and competencies. Science has ruled out this explanation: Two large meta-analyses (Hyde 2005, Zell et al. 2015) tested this gender similarity hypothesis and provided empirical evidence that medium to large gender differences arise in some domains, including physical aggression, spatial ability, and mate preferences, but differences are relatively small on most psychological variables like cognition, personality, and well-being, which are important traits for leaders and founders.

Other studies have corroborated and refined these results by revealing that gender differences for executives are much smaller in psychological characteristics such as conscientiousness, emotional stability, extraversion, assertiveness, strategic thinking, and decisiveness than

for non-executives (Wille et al. 2018). Hence, although there are some natural differences between men and women, such as biological and physical characteristics, men and women are not different in most psychological aspects that are judged important for creating a startup or for leadership in organizations.

# 3

## **CREATING DIVERSE, EQUAL, AND INCLUSIVE STARTUPS**

**Knowing the reasons that scientific studies have put forward to explain the underrepresentation of women in executive positions and STEM fields and based on our analysis of gender diversity in German and French startups, we can now provide recommendations for creating diverse, equal, and inclusive startups. Aside from our societal duty to create equality for everyone, diversity and inclusion can pay off! Gender diversity in founding teams fosters higher economic success through higher returns and more frequent outperformance of market benchmarks (Christiansen et al. 2016), higher profitability, innovation, and value creation of the company (Nordea 2018), and at the macroeconomic level GDP growth, higher productivity, and rising wages (Ostry et al. 2018).**

In general, having more women on the team makes groups smarter. More specifically, higher collective intelligence, which is defined as the ability of a group to perform a wide variety of tasks, such as in a startup, makes teams perform better in a range of different tasks. Collective intelligence is increased by high social sensitivity in the team and this skill is more often enabled by women (Woolley & Malone 2011; Woolley et al. 2015).

Furthermore, having more female founders will increase the diversity of startup employees because female founders hire more women. In fact, studies show that startups with a female founding team hire 2.5× more women, and companies with a female founding team and female CEO hire 6× more women (Kauffman Fellows 2019). In addition, businesses run by female founders are more likely to focus on making a social contribution and building good relationships with employees (Shmailan 2016).

### **3.1 BREAK GENDER BIAS!**

First and foremost, we need to break gender bias and engage in equal and inclusive processes and structures in the startup and investment process. (Un)conscious

biases and discriminatory behavior need to be addressed early throughout education and throughout the startup process with its various stakeholders. Studies show that gender stereotypes already develop at the age of six and have an immediate effect on children's interests in that girls avoid activities that are said to be for boys (Bian et al. 2017). These stereotypes influence girls' and women's career choices in that they do not pursue careers in fields like math or physics, where brilliance and innate talent are considered the main requirements for success (Leslie et al. 2015). The brilliance of founders, which is typically not ascribed to women, may also be perceived as an essential requirement for startup success. One way to counter gender stereotypes at an early age is by setting and promoting female role models and counteracting stereotypical activities. Research shows that female role models inspire and motivate other women through non-verbal signals and increased self-perceived and other-perceived quality of speeches (Latu et al. 2019). Hence, by promoting role models of female founders, gender stereotypes can be countered.

In addition, gender stereotypes need to be addressed throughout the startup process. Founders need to be embedded in a gender-neutral ecosystem when setting up a startup, starting with equal access to opportunities and resources. We need to create gender-neutral startup programs, incubators, accelerators, and investment processes. That means setting up structures and processes that warrant equal assessments. For example, a groundbreaking study by two economists showed that orchestras became more diverse through "blind" auditions (Goldin and Rouse 2000). These "blind" auditions may also work for startup pitches in the investment process when founders pitch behind a curtain and with neutral (computer-generated) voices. Furthermore, studies show that partly random selection can be an effective tool to address the gender gap (Berger et al. 2020). In particular, this means that, after a carefully targeted preselection resulting in a pool of only highly

qualified startups, a lottery draw makes a more equally qualified final decision than a human decision-maker would.

Finally, it may also break bias in the investment process if the venture capital industry became more diverse. Studies estimate that the share of women in top positions in venture capital is below 10% worldwide. There are some prominent examples of women in Germany, such as Kiana Mardi, Investment Director at Alstin Capital, Daria Saharova, Managing Director at Vito One, and Romy Schnelle, Partner at HTGF, and in France, such as Roxanne Varza, Director at StationF, Costanza Carissimo, Vice President at Cathay Capital, and Edna Cohen Ohana, Venture Investor at Kering. Research shows that women and men hold the same stereotypes about their own as well as about the other gender. However, studies also demonstrated that male investors invest more in male startups, while female investors invest more in gender-diverse startups (Skonieczna & Castellano 2020). Hence, increasing the diversity of venture capitalists may also increase diversity in startups. This would help increase the understanding of the value proposition of female founders. Male investors typically struggle to relate to the value proposition of female founders because female founders address their personal, i.e., female, problems or social problems at a lower socioeconomic level.

### **3.2 FILL UP THE STEM PIPELINE WITH WOMEN!**

Furthermore, we need to fill up the STEM pipeline with more women to increase the number of female founders and employees in tech startups. Dealroom's latest tech report states that Europe's deep tech companies are worth a combined EUR 700 billion today. They predict a lot of unlocked potential for deep tech if they can source more experienced talent pools. Women can represent such an experienced talent pool if the EU manages to educate more women in the STEM fields.

Following Stoet and Geary's (2018) study, it is certainly not an option to decrease gender equality in Germany

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**We need to fill up the STEM pipeline with more women to increase the number of female founders and employees in tech startups.**

and France in order to promote more women in STEM fields. Instead, various programs have been implemented to increase girls' and women's interest in and engagement with STEM. For example, various school programs have been launched to promote STEM interest among girls and make STEM degrees attractive for young women, e.g., "Komm-mach-MINT" in Germany. However, given the pervasive gender gap throughout recent years, these programs do not seem to be as effective as they should be.

Many tech companies such as Google, Microsoft, and Apple have put programs in place to promote female founders, and there are also national programs such as "Exist" in Germany, or "WILLA" in France (company incubator for women in the French tech sector), alongside "50 in Tech" and "French Women in Tech". Still, looking at the current numbers as presented in this paper, it appears we still have a long way to go to close the gender gap in STEM and tech startups.



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## Conclusion

**The startup ecosystem neglects a large proportion of its innovative potential, i.e., women. Our report demonstrates in clear numbers for Germany and for France the consistent and wide-ranging underrepresentation of female founders and employees in startups across all industries, particularly in tech startups, even though women make up half of the world's population and half of all university graduates. The underrepresentation of women is concerning given that startups and their ecosystems are the driver of every modern economy and are in dire need of talent.**

To address this gender gap, we suggest that founders form gender-diverse teams, as their startups tend to achieve a high valuation compared to female founders and female founding teams. In addition, we call on investors to establish equal and inclusive processes and structures throughout the investment process, e.g., structured pitch sessions and anonymized pitches, and to increase the number of women investors among their own ranks who understand the business solutions of female founders and can act as role models. Finally, we call on policymakers to ensure equal access to startup resources, e.g., public funding, work-life balance support, and talent, particularly tech talent, i.e., more women in STEM.

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### EDITOR

Technical University of Munich  
Chair for Strategy and Organization  
Arcisstr. 21  
80333 Munich

### AUTHORS

**Dr. Theresa Treffers**  
Technical University of Munich  
Chair for Strategy and Organization  
and  
Seeburg Castle University  
Austria

**Lukas Heidegger**  
Technical University of Munich  
Chair for Strategy and Organization

**Prof. Dr. Isabell Welpe**  
Technical University of Munich  
Chair for Strategy and Organization

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