
The Drone Industry Barometer 2021

Consolidating New Trends and Perspectives of the Commercial Drone Industry

Drone Industry Insights | Whitepaper | September 2021



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EXECUTIVE SUMMARY

The Drone Industry Barometer is our second-most downloaded free product and an opportunity for us to listen to drone companies all around the globe in order to understand and share their views on the state of the drone market. After a whole year of the COVID-19 pandemic and half a year of recovery, the 2021 edition of the Barometer brought some promising insights about the state of the drone world.

In terms of participation, the 2021 survey received responses from all around the world, with a strong showing by Asian countries. Based on data published in our yearly [Drone Market Report](#), China and the US are the two strongest commercial markets in the world, and these were the top two countries that participated in our 2021 Barometer. Other countries in the top ten (e.g. Japan, Germany, South Korea, and the UK) were also in the top 10 of respondents for the Barometer, so we are confident the data is as representative as ever.


This year saw a few “firsts” in terms of drone applications. The pandemic brought DSPs (Drone service providers) a lot of increased media exposure, so “deliveries” reached almost 10% of DSP services for the first time. As another first, according to our [Drone Application Report](#), mapping & surveying are the most common application methods throughout the global industry, but this year’s participants in the Barometer were more involved with inspections (the second-highest application method according to other data). So, it will be interesting to see next year if this is an industry-shift or merely a coincidence for this year’s survey.

“Why are companies adopting drones into their business?” For those of us in the industry, the plethora of reasons seem rather obvious. And yet this year’s respondents ranked “*improving quality*” higher than “*saving time*” (another first). So now that companies have a better understanding of the benefits of commercial drones, perhaps it’s harder to focus on only *one* key reason to use drones rather than highlighting many.

Regarding the topic of “expectations vs reality”, it is common for expectations to be higher than reality, even outside the drone space. But the last years have seen the two converge so that expectations and reality get closer, which is a sign of a maturing industry. And one interesting result from this year’s survey is that the expectations for the next 12 months are almost higher than ever. So perhaps next year will be better than ever.

Speaking of the pandemic, respondents had a much less negative view on it, and a more optimistic outlook on its long-term effects. There was less downsizing, less companies experiencing a “decrease in demand”, and more companies expressing an “increase in demand”.

In conclusion, the past year presented challenges, yet many drone companies turned these into opportunities. Once the necessary regulations are in place, drone tech will finally become scalable.



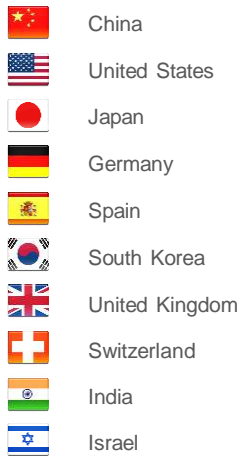
Drone companies are more optimistic than ever, despite or perhaps even because of the global pandemic.

INTRODUCTORY FACTS OF THE DRONE INDUSTRY BAROMETER

Our 4th annual drone industry survey took place in August 2021 to measure changes in the opinions and perceptions of drone companies towards the commercial drone market. Over the course of one month, we collected 678 survey responses which almost exactly matches the amount of completed surveys in 2020. The survey was distributed via our newsletter, as well as other supporting partners.

We received responses from 64 countries, with China leading by having provided 129 responses alone. Most of the companies that responded, are small sized companies with less than 10 employees (43%), followed by companies with a size below 50 employees (30%). The top 10 of the most represented countries (see table below) account for 66% of all answers.

Top 10 Most Represented Countries in the Survey



Survey Respondents by Company Size

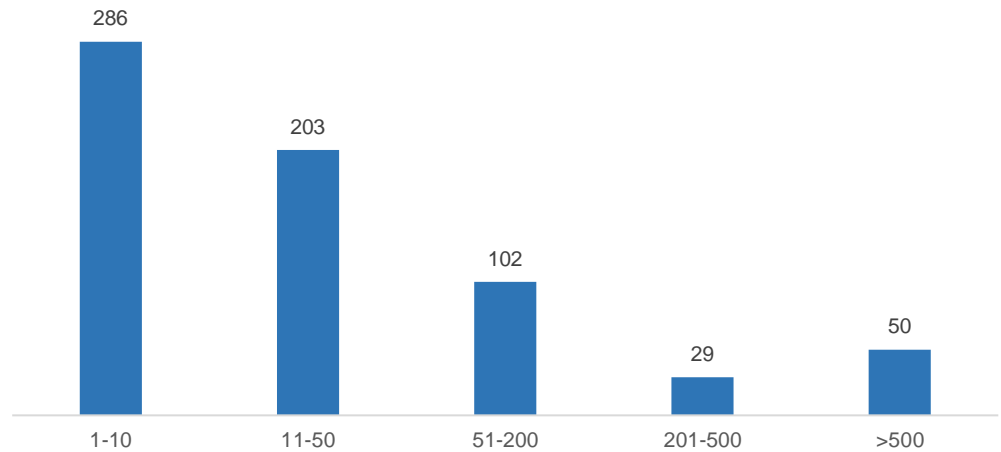


Fig 1: Most Represented Countries on Drone Industry Barometer Survey

Fig 2: Company Size of Respondents (n=670)

Survey Respondents by Market Segment

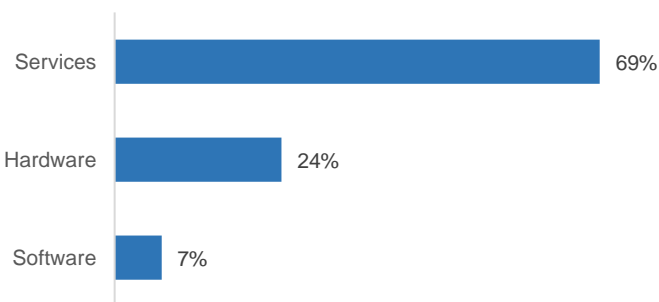


Fig 3: Survey Respondents by Market Segment (n=675)

The share of responses in the service segment increased in comparison to last year (2020: 65%). Within the service segment, drone service providers show an overall share of 28%.

The portion of hardware manufacturers keeps on increasing. After a share of 14% in 2019 and 22% in 2020, the share of answers from the hardware segment reached 24% in 2021.

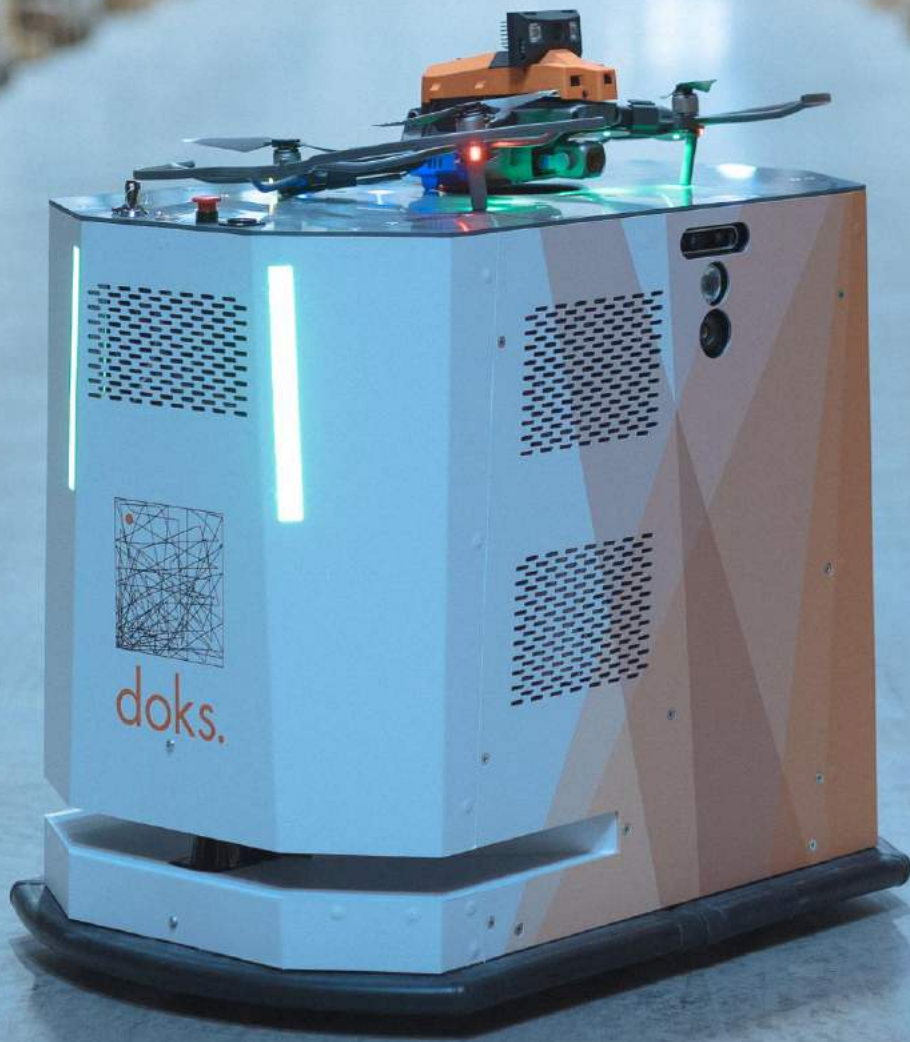
Finally, the number of replies in the software segment reduced to 7% after reaching 13% in 2020.

The least responses came from passenger drone manufacturers and the service sub-segment maintenance.

Definitions:

Segment	Sub-Segment Examples
Hardware:	Platform and components, counter-drone system and eVTOL/passenger drone manufacturers, etc.
Software:	Manufacturers of software for UTM, flight-, fleet- & operation management, data analysis, etc.
Services:	Drone service providers (DSP), drone operators for business-internal services (BIS), training, education, insurance, research, engineering, reseller, maintenance, etc.

Business-internal services leaped ahead, both in inspection and in mapping & surveying tasks.



DRONE OPERATION

We asked companies for what purposes they operate drones. These companies are either drone service providers (DSP) or business-internal services (BIS). DSP's are third-party service companies whose business is to offer drone services to clients from all kinds of industries like energy, construction or agriculture. BIS are mainly companies operating drones in-house and do not offer services to third parties.

The most relevant findings are:

- Last year, the share of BIS engaged in Inspection methods was 18%, which skyrocketed to 49% of BIS activities in 2021. For DSPs, the share of Inspections remained the same at 35% of respondents engaging in these services.

- After combining the methods Mapping + Surveying in our market model, this now represents the second most-common method for using commercial drones.
- Drone delivery ramped up strongly for DSPs (compared to <1% share in 2020) and is therefore offered almost exclusively as-a-service.
- "Other" methods (like close-proximity sensing, broadcasting, entertainment, electromagnetic surveys, advertising, etc.) are in development and on their way to become mainstream. Most of this pioneering work is done by DSP's.
- Photography & filming lost most shares compare to last year.

For What Purpose Do You Operate Drones?

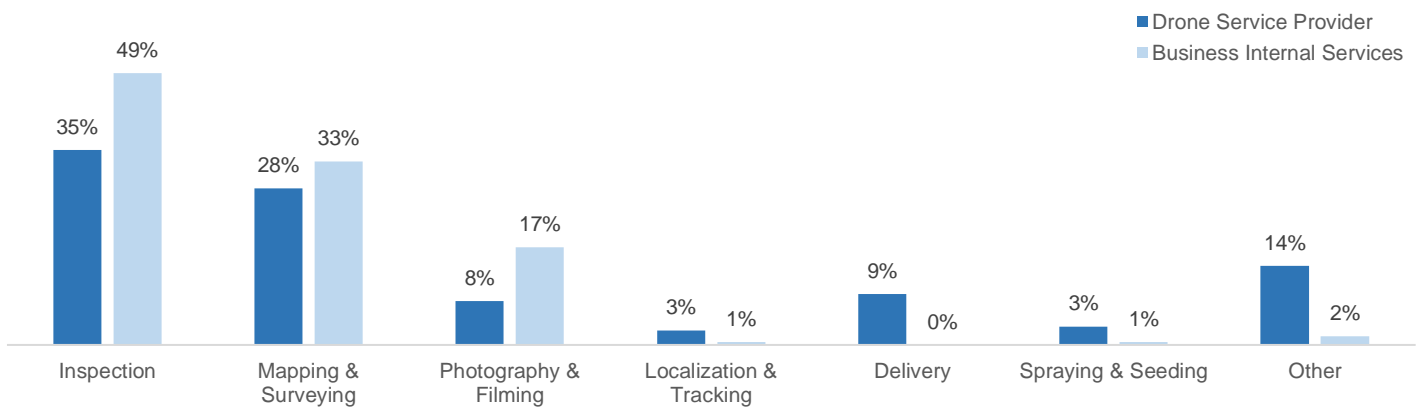


Fig 4: Purposes to Operate Drones (multiple answers possible, n=198)

Reason for Adopting Drones

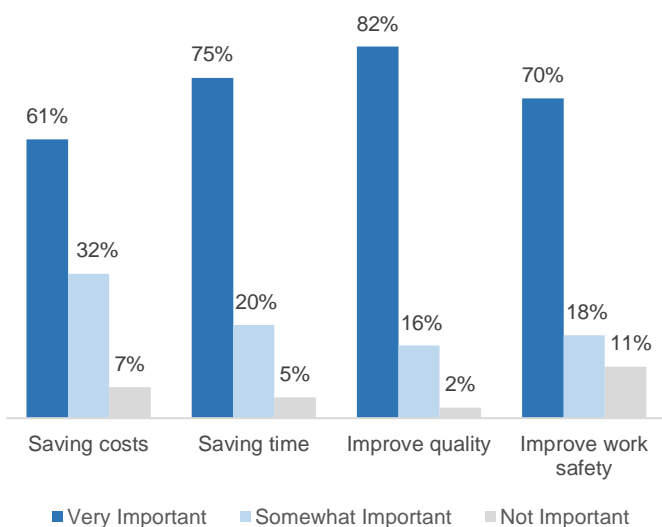


Fig 5: Reasons for Adopting Drones (n=44)

As in last year's survey, we asked BIS operators about their main reasons for adopting drones.

Saving time (75%), and the associated increase in overall productivity, is for the first time not the leading reason anymore. Improving result quality ranks first with 82%, which speaks a lot for the work that drones carry out and their capacity to deliver better results than other alternatives.

Using drones to improve overall safety by bringing workers out of harm's way (70%) is even more important than directly saving costs (61%).

Of course, all businesses are different (construction, energy, agriculture, etc.), and the surveyed aspects might apply more or less strongly to each company in their day-to-day use of drones.



The last years have seen expectations and reality converge, which makes the drone industry more stable and predictable

EXPECTATIONS VS. REALITY

Another aspect that the Barometer seeks to measure is companies' expectations of the drone market. Therefore, the graph below shows the comparison of how the respondents' expectations match with the reality from different perspectives (ex ante vs. ex post of the respective year). The past four years of surveying show that each year, drone industry expectations somewhat decrease.

When it came to expectations for the subsequent 12 months

(blue bubbles), e.g. respondents from 2018 were much more optimistic (7.3) than respondents in 2019 (6.6), who were in turn more optimistic than in 2020 (6.3).

The grey bubbles show how the respondents rated their previous 12 months. The decrease from 6.6 in 2017 to 6.0 in 2020 suggests that the last years have been tough for the industry when compared to their expectations.

Comparison of Retrospective Analyses of the Drone Market with Prospective Ones

(0: dramatically falling - 10: strong sales growth)

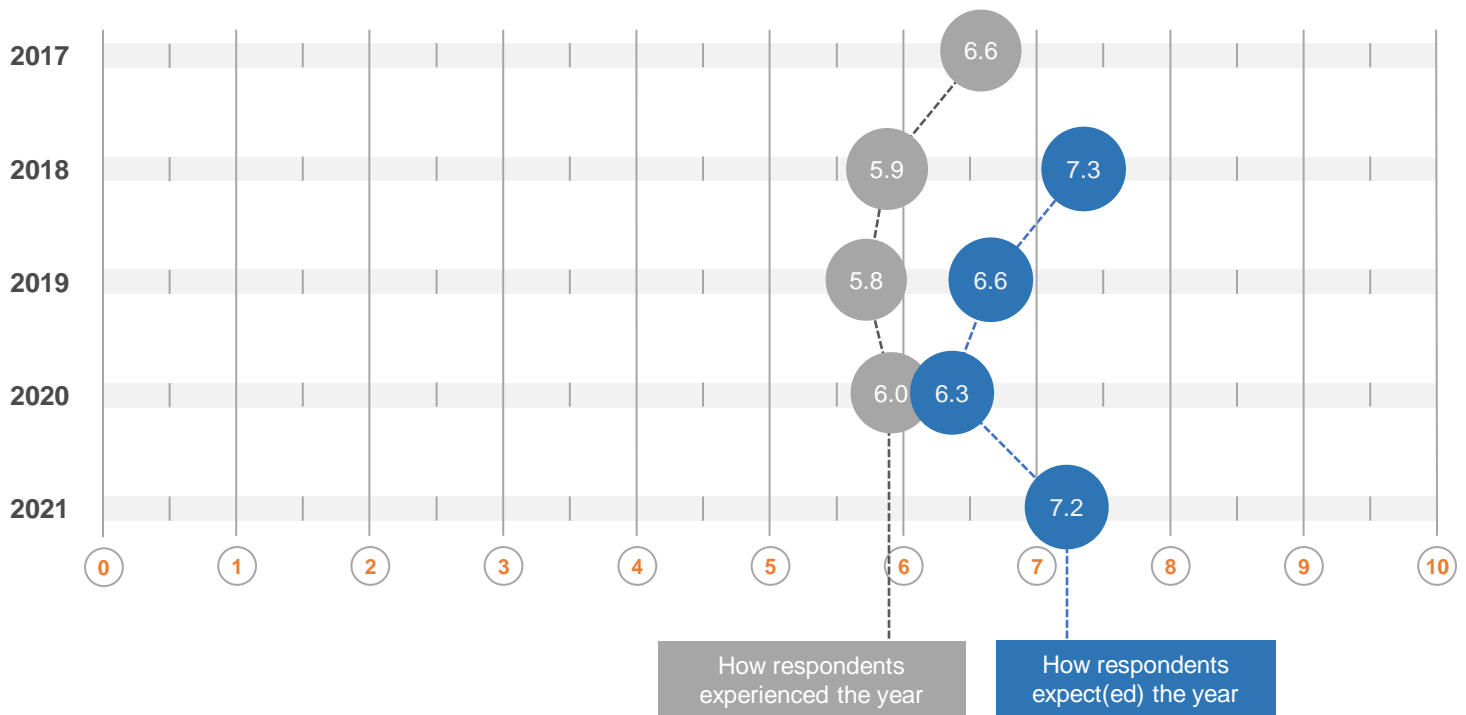


Fig. 6: Market Development in the Next 12 Months and Their Reflections on the Past 12 Months (n=642)

In 2021, the trend of expectations and reality converging continued. Although the constant lowering of expectations every year (from 7.3 in 2018 to 6.3 in 2020) could be seen as a "reality check", these expectations have also gotten closer and closer to the experienced reality (grey circles). These numbers converging is a sign of a drone market that is maturing and becoming more stable and predictable.

Of course, a great outcome in a future edition of this Barometer would be a scenario where the reality surpasses the expectations. And now that expectations are getting closer and closer to reality, it may not be too long before we witness a boom year where this is precisely the case.

A big surprise is the strong optimism for the upcoming 12 months (7.2). For the first time, we see a reversal of the negative trend of the last years, and 2021 had the second-highest optimism ever. Topics such as the "remotization" of work, drone delivery, stronger digitalization and industry adoption are giving drone companies a boost in confidence all around the world.

It remains to be seen if this optimism will materialize 12 months from now. As we have seen in previous year, it is likely that the expectations will not be met, and yet the key takeaway remains: drone companies are more optimistic than ever, despite or perhaps even because of the global pandemic.

MARKET DEVELOPMENTS BREAKDOWN

As mentioned, the difference between expectation and reality was very small. And it is also a good sign that companies in most market segments continued to experience solid sales growth.

Passenger drone manufacturers seem to be very happy with how the last year turned out. The trust is strong in this sub-segment which is no surprise, since it represents nothing less than the beginning of a new era in commercial aviation.

DSP's also had a better year than the one before. A high

industry interest in general and the pandemic allowed them to leverage operations even more than expected.

Counter-drone services bounced back with stronger sales growth after experiencing a sharp decrease from 2019 to 2020.

Overall, most sub-segments experienced a better year than the previous one (with the exception of software manufacturers, drone integration/engineering, and business internal services).

How has the market developed in the last 12 months?

- Sorted from strongest to lowest expected growth per segment -

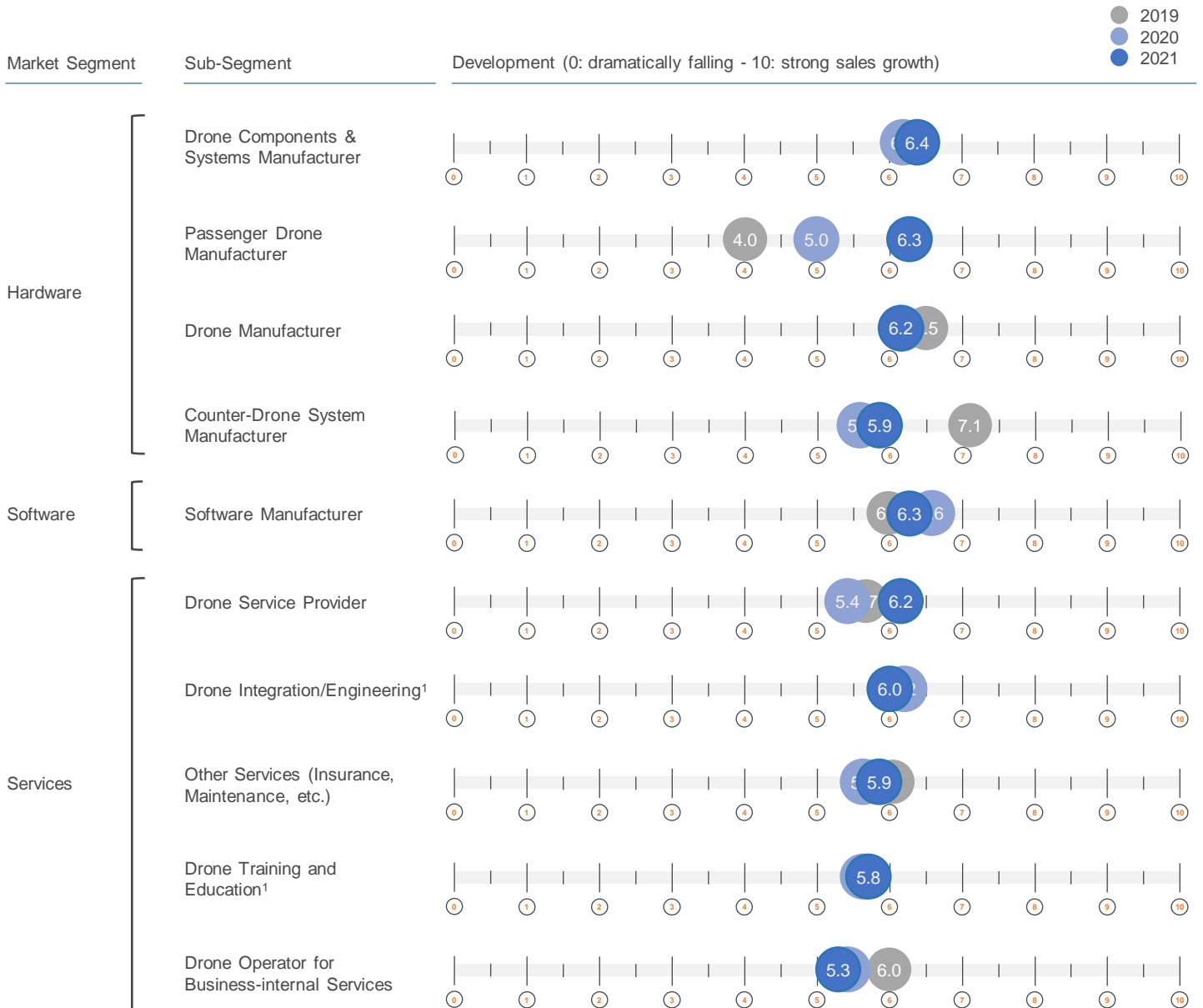


Fig. 7: Market Development in the Last 12 Months by Market Segment (n=642)

¹ these sub-segments have no 2019 comparison data

MARKET DEVELOPMENTS BREAKDOWN

How do you expect the market to develop in the next 12 months?
 - Sorted from strongest to lowest expected growth per segment -

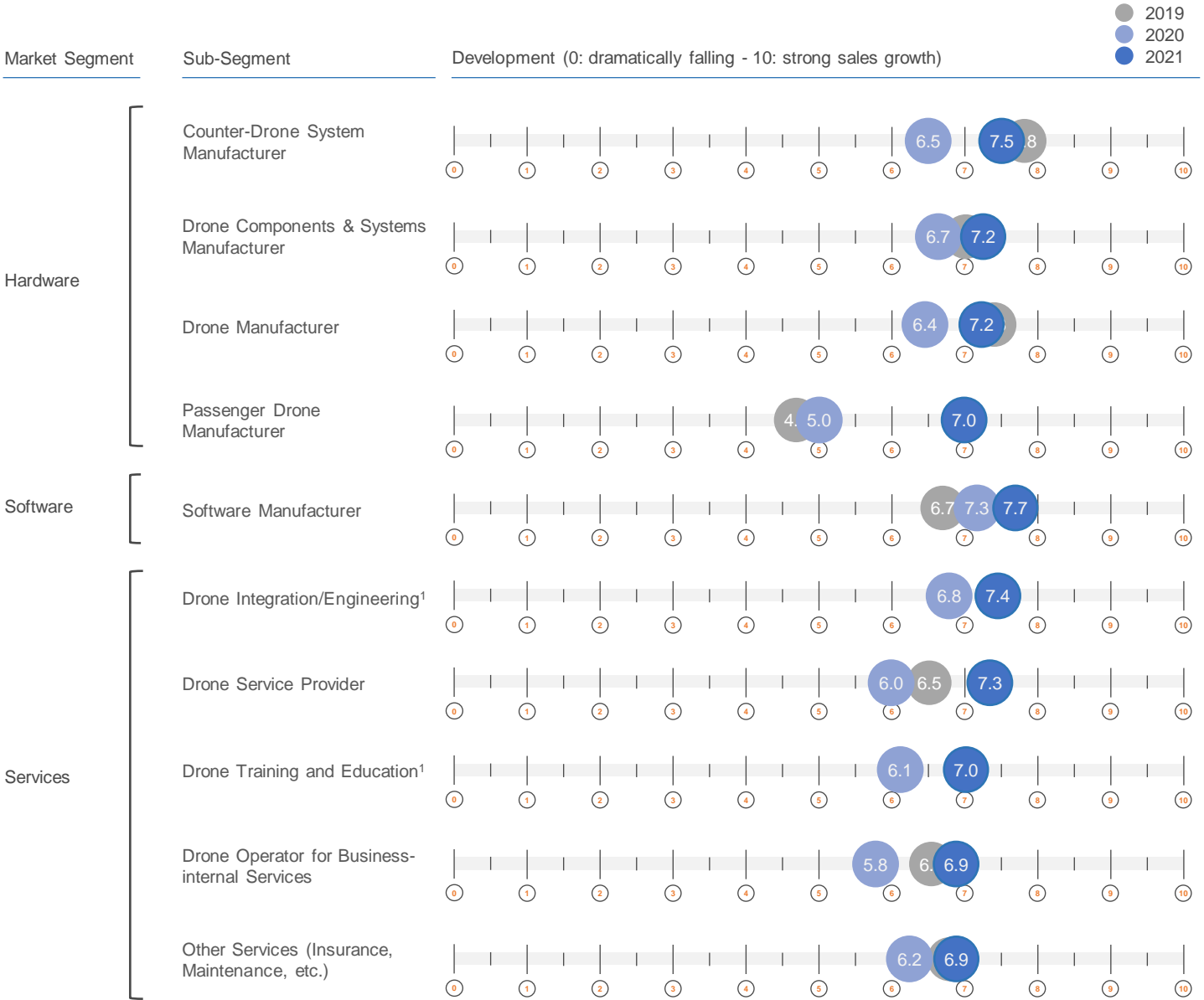


Fig. 8: Market Development in the Next 12 Months by Market Segment (n=639)

After a year of pessimism, the expected market development for the coming year is a lot more positive. While last year's outlook was an average of 6.3, the average for the next 12 months is a lot more positive at an industry average of 7.2.

The graph shows that every market segment is more optimistic than last year. In most cases you can see an all-time high level of expectations. Furthermore, all respondents are very close in the level of optimism (6.9 worst, 7.7 best). There is no market segment that is overly optimistic or pessimistic compared to others.


Possible reasons for this confidence are the perspective of an end to the coronavirus crisis, the general upward movement of

trade and the overall degree of industry adoption.

“Remotization” of work started with lockdowns and home-office a year ago and it has started to be facilitated as the new normal in many companies. In this context, drones play a big role in data acquisition (sensing), dispensing and seeding (acting) and transportation of goods (delivery).

Once again, the major leap from 5.0 to 7.0 in the passenger drone sector makes for an exciting future. Record funding rounds, IPO's trial programs, progress in the type certification process and a generally high interest in Urban Air Mobility around the world has provided a boost to the confidence of actors in this revolutionary area of the drone space.

¹ these sub-segments have no 2019 comparison data



The past year presented challenges,
yet many drone companies turned
these into opportunities

THE IMPACT OF THE CORONAVIRUS

The overall observation is that, in retrospect, the impact of the coronavirus pandemic was not as bad for drone companies as anticipated a year ago. Last year, most respondents perceived a rather negative effect, but this now seems to be turned around to a more positive or at least less negative perspective.

After one year of COVID-19, less companies experienced a drop in demand (35% in 2021 vs 43% 2020) while more saw an increase in demand (22% vs 15%). More companies also stated that the pandemic had no impact on their business (29% vs 19% in 2020). All of this could be a sign that companies found a way to adjust after a few months of 2020 so that in 2021 there would be less impact by the virus and lockdowns. Another piece of evidence for this is that staff layoffs also went down to 9% this year (2020: 16%).

How has or will your business be impacted by the coronavirus?

(Multiple selection possible)

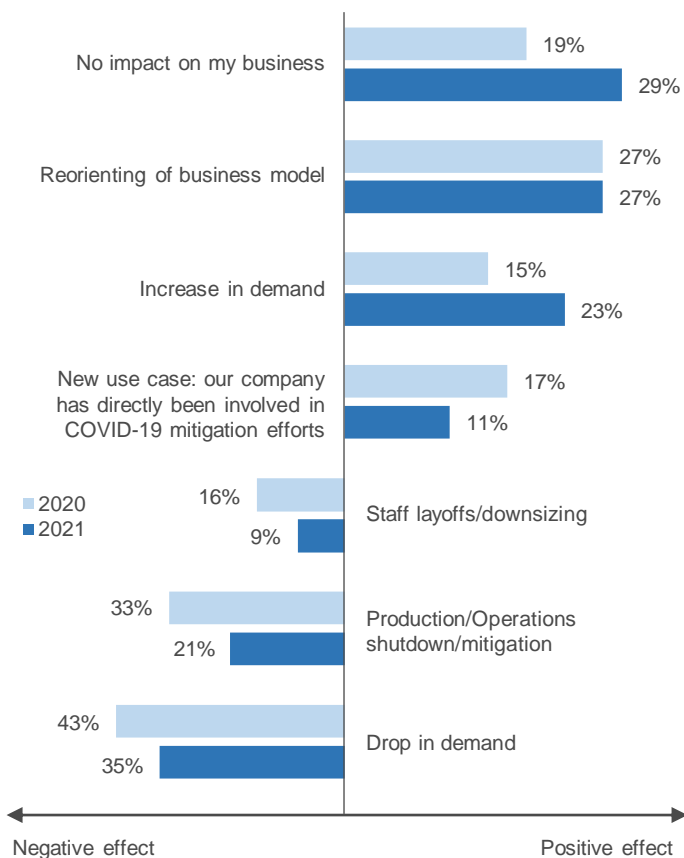


Fig 9 : Business Impact of the Coronavirus Crisis (n=653)

Not surprisingly, less companies in 2021 stated that COVID-19 brought new use cases to help mitigate the pandemic (11% vs 17%). At the start of the pandemic, those companies that had a

first-move advantage were likely able to capitalize on it, while others did not or could not to jump on the opportunity one year later in 2021. On that note, it is interesting that in both years, the same number of companies (27%) said the coronavirus led them to “reorienting of business model”.

So even if they did not build new use cases for the pandemic, they nevertheless had to make some adjustments because of it.

In addition to asking companies how they’ve been affected by COVID-19, we also asked them about what long-term effects they thought the crisis would have on the drone industry. The majority (52%) thought that ultimately the coronavirus pandemic would positively impact the industry, while only 15% thought the effects would be negative and 33% had no opinion. Compared to last years’ data, this distribution did not change much.

Undoubtedly, the global health pandemic will likely continue to impact the drone industry, as demand for automation increases and consequently special permissions for various drone operations increase in number. Therefore, the true impact of coronavirus pandemic remains to be seen in the long term as the industry awaits further integration of drones into airspace, especially urban and suburban areas that are currently heavily restricted.

Governmental investments into unmanned research projects and initiatives are increasing, as authorities are witnessing automation emerge as a tool for them to tackle 21st century challenges. Commercial drones, for the first time, had a chance to shine and they did not just live up to the expectations, they largely exceeded them.

Will the coronavirus crisis have a positive or negative impact on the drone industry as a whole in the long-term?

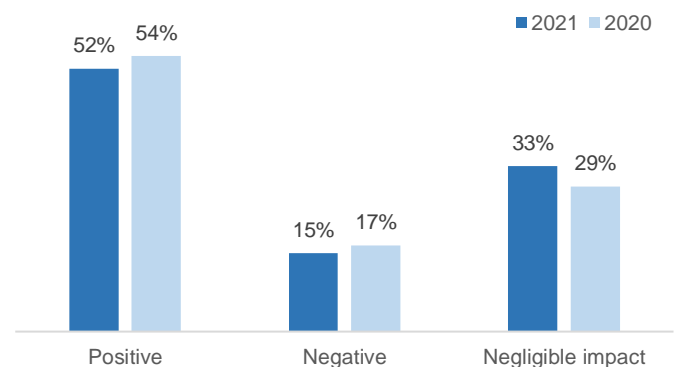


Fig 10: Long-term effect of the Coronavirus Crisis (n=609)



As products/services have matured, the drone industry has reached a stage of refined products and services, talented staff and stable revenue.

RESOURCES

Resources of any kind are there to help create a company or product. Unfortunately, resources are limited. In order to achieve the most efficient and economically-optimized use of resources, they must be meaningfully distributed. Therefore, to

see what drone companies are investing their time and energies in, we asked them what they prioritize when it comes to resource allocation. The resource distribution plans of drone companies are shown in Figure 11 below.

What will you prioritise in your resource spending in the next 12 months?
(Multiple selection possible)

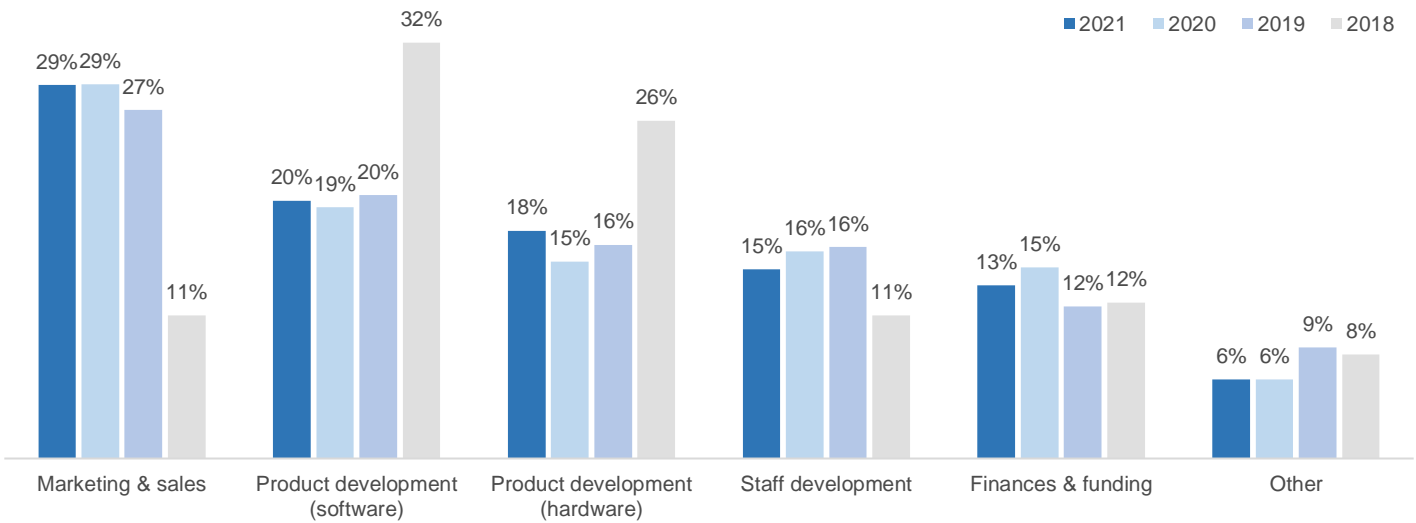


Fig. 11: Survey Respondents' Answers to What They Allocate Their Resources To (multiple answers possible, n=638)

As drone markets have matured, the drone industry has reached a stage of refined products and services, talented staff and stable revenue. Therefore, it's no surprise, that the priorities are not changing dramatically.

Marketing remains the leading priority for the next 12 months, as it has been in the previous three years. The competition in the drone market is tough – regardless if hardware, software or service segment. As niches fill up and highly-advanced technology becomes mainstream, unique selling points dilute. Marketing products towards new clients and outrivalling competitors is a big ask, especially for small companies.

Product development in general receives the second highest resource spending, though it is at a much lower level than in 2018. Therefore, even when stable, the market is still moving rapidly in terms of technical advancements. Not being ahead of the game means losing ground to competitors.



With each new Barometer, rule-making authorities have become more and more important.

DRIVING FACTORS IN A DYNAMIC MARKET

As a basis for the further development of the drone industry, we asked the participants about the roles that they considered to be the most important and significant.

The highest market-driving factor this year are rule-making authorities. As technology matures and proof-of-concepts are completed, and as more and more paying customers start waiting in line, the operational limits defined by these authorities begin to weigh higher and higher. The pressure for the industry keeps rising – if clear roadmaps and regulatory frameworks don't come into effect soon, it will become hard to scale any business within the commercial drone space. This is why with each new Barometer, rule-making authorities have become more and more important.

Hardware: according to respondents, drone hardware manufacturers are the second most important market-driving actors, which is a substantial increase from previous years. Now that the drone industry has matured more, hardware manufacturers will play an important role in the market by ensuring they can supply enough drones to meet market demands. This is perhaps also why we saw a rise in the importance of software manufacturers.

Not surprisingly, drone operation, both in-house (BIS) and third-party (DSP), has been steadily growing over the past years. As the market matures and hardware/software manufacturers specialize, more and more companies begin to adopt and integrate drones into unique and innovative services.

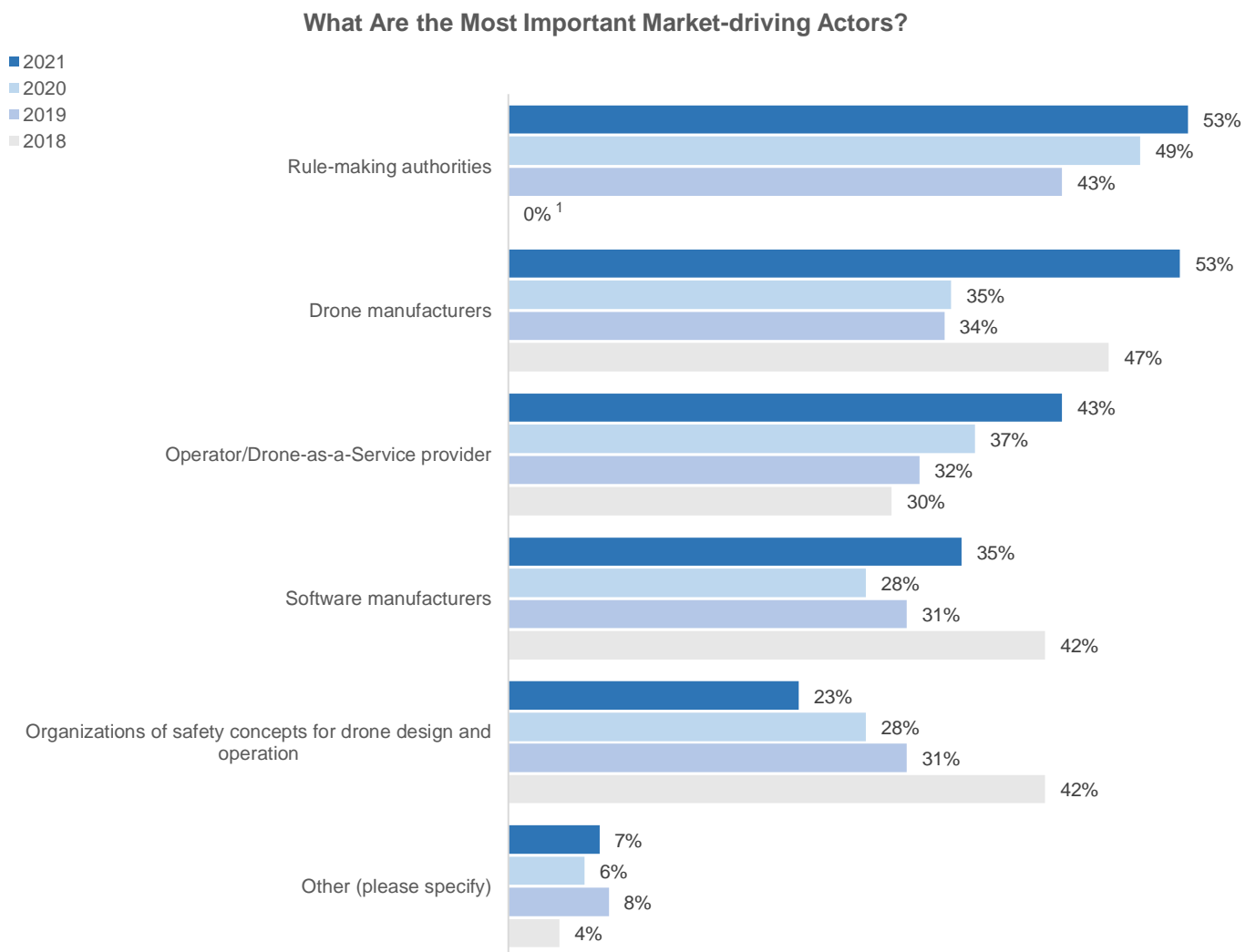


Fig. 12: Survey Respondents' Assessment of the Most Important Market-Driving Actors in the Drone Industry (n=660)

¹Rule-making authorities were not included as an option in first industry barometer survey in 2018

ABOUT

The study was conducted from July 2021 until the end of August and distributed by industry partners, drone coalitions, alliances and initiatives around the world.



DRONEII.com is the leading market research and analytics company for commercial drones. Their core business is to create new knowledge in the field of unmanned systems. Their comprehensive understanding of the commercial drone market combined with a global view enables them to create industry reports and bespoke market studies. Combined they have more than 40 years of experience in manned and unmanned aviation and other relevant industries.

Supporting Partners for Survey Distribution



Special thanks to Chairman Yang Jincal and the WUAVF/Shenzhen UAV Industry Association for the translation, survey distribution and data collection in China. Special thanks to DaiyaService, Japan, for the translation into Japanese.

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