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THEMATIC RESEARCH

THE ESG RISK RATINGS

EXPLORING THE INTERNET SOFTWARE AND SERVICES SUBINDUSTRY

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About Sustainalytics

Sustainalytics is a leading independent ESG and corporate governance research, ratings and analytics firm that supports investors around the world with the development and implementation of responsible investment strategies. For over 25 years, the firm has been at the forefront of developing high-quality, innovative solutions to meet the evolving needs of global investors. Today, Sustainalytics works with hundreds of the world's leading asset managers and pension funds who incorporate ESG and corporate governance information and assessments into their investment processes. With 13 offices globally, Sustainalytics has more than 390 staff members, including over 180 analysts with varied multidisciplinary expertise across more than 40 sectors. Over the last three consecutive years, investors named Sustainalytics among the top three firms for both ESG and corporate governance research in the Independent Research in Responsible Investment Survey. For more information, visit www.sustainalytics.com.

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Narrowing the conversation

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In this report, the second instalment in our three-part ESG Risk Ratings white paper series, we move the conversation from the macro to the micro and focus our ESG Risk Ratings model on the Internet Software and Services (ISS) subindustry.[1]

We have selected the ISS subindustry to showcase our ESG Risk Ratings for several reasons. The 42 covered issuers that fall into this subindustry include some of the largest, dynamic and most widely followed companies in the market, including Alphabet, Twitter and Facebook. Additionally, the covered issuers in this subindustry are heavily and uniquely exposed to risks from the hot-button ESG issue of data privacy and security, which has dramatically captured investors' attention in recent months.

Report outline

Bringing exposure and management together

We begin this report by describing the ISS subindustry and analysing the key sources of ESG risk exposure for ISS companies. In the next section, we look at management and determine how effectively ISS companies are managing their ESG risk exposure. Bringing the exposure and management threads together, we then review ESG Risk Rating scores for the subindustry. We conclude with a case study of Facebook, one of the subindustry's most high-profile firms.

10 Key Takeaways

- Company-specific ESG Risk Ratings within the ISS subindustry range from 34.2 (Gaming Innovation Group) to 19.7 (eBay), with an average of 26.1.
- The ISS subindustry faces slightly less gross ESG risk exposure than most other subindustries (average exposure score of 36 vs overall subindustry average of 37).
- The main sources of ESG risk exposure for ISS firms include Corporate Governance, Data Privacy and Security, and Human Capital.
- Nearly three-quarters (72%) of the ISS subindustry's ESG risk exposure is unmanaged, compared to an average of 65% across all subindustries.
- Company-specific exposure scores range from 43.2 (Alphabet) to 32.1 (Autohome, YY and Momo), with an average of 35.8.
- Over three-quarters (83%) of the subindustry has a beta between 0.9 and 1.1, indicating risk exposure that is in line with subindustry norms.
- The ISS subindustry is a poor performer in ESG management: no ISS firm has a management score above 50, a threshold that we consider to be reflective of strong management capabilities.
- However, company-specific management scores are highly variable, and range from 49.1 (eBay) to 12.4 (Gaming Innovation Group).
- Our case study of Facebook unpacks the company's worst-in-class rating on the increasingly salient issue of Data Privacy and Security.

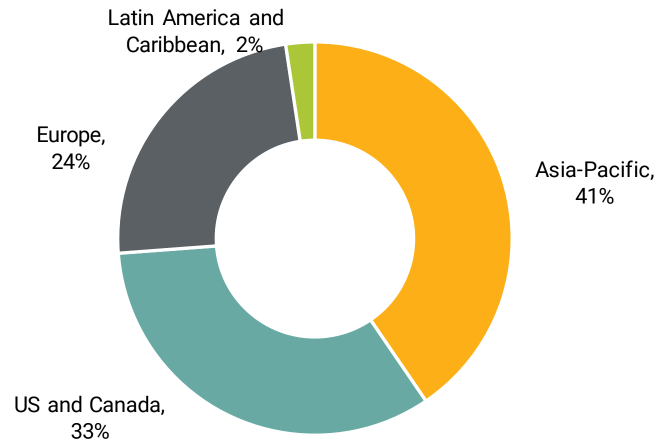
Industry characteristics

Breaking down the ISS subindustry

ISS firms are clustered in Asia-Pacific and the US and Canada

The ISS subindustry includes companies that provide internet software applications and various online and internet-related services, such as cloud computing, online shopping, search engines, e-commerce sites and online video platforms. Our coverage of the subindustry includes 42 firms concentrated in Asia-Pacific (41%) and the US and Canada (33%), as shown in Figure 1.

Figure 1: Percentage breakdown of ISS companies by region*



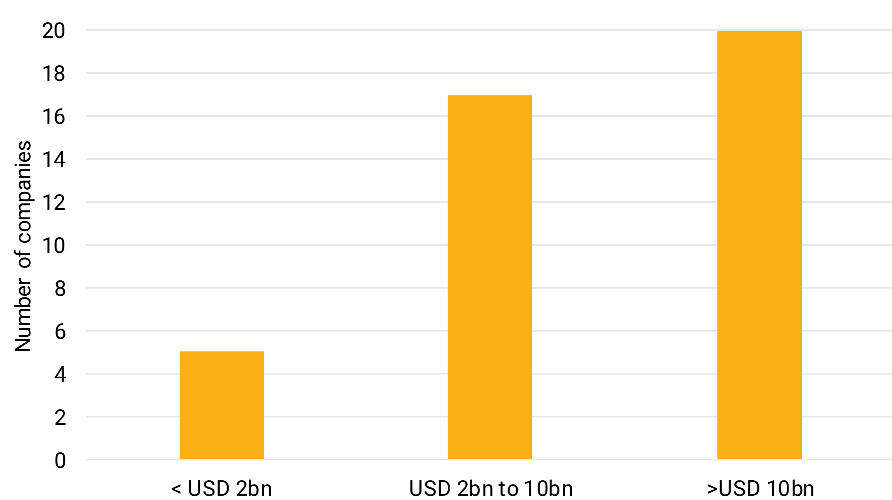
* As of October 2018

Source: Sustainalytics

Large cap bias

The average market cap among firms in the ISS subindustry is USD 71bn, which is nearly four times larger than that for our coverage universe as a whole (USD 19bn).[2] As shown in Figure 2, nearly half of the subindustry (20 firms out of 42) has a market cap in excess of USD 10bn.

Figure 2: ISS subindustry by market capitalization



Source: Sustainalytics

ESG risk exposure

Assessing the exposure of the ISS subindustry

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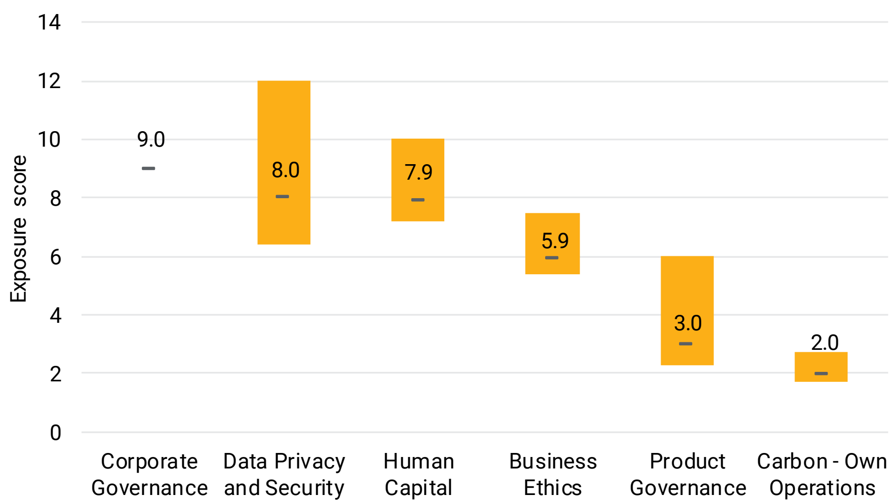
We begin our discussion by looking at the sources of material ESG risk exposure for companies in the ISS subindustry.[3] A subindustry's exposure score is the sum of the average exposure score for all companies in the subindustry on the MEIs for that subindustry.[4] As shown in Figure 3, there are six MEIs for companies in the ISS subindustry, with average exposure scores that range from nine (Corporate Governance) to two (Product Governance). The yellow bars in Figure 3 show the range in exposure scores for each MEI, with the average indicated.

Figure 3: Exposure scores per MEI in the ISS subindustry*



* As of October 2018

Source: Sustainalytics

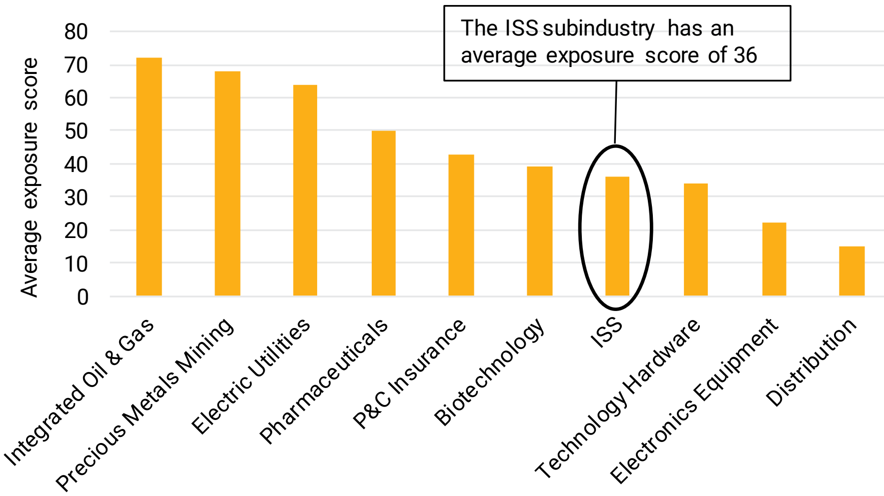
Less gross risk exposure compared to other subindustries

The ISS subindustry thus has an average exposure score of 36, which compares to a subindustry average of 37 across our full ESG Risk Ratings coverage universe of approximately 4,400 companies. Since a higher exposure score reflects fundamentally riskier business activities from an ESG perspective, this means that the ISS subindustry faces slightly less gross ESG risk exposure than is typical for subindustries across the economy. However, this observation does not (yet) take management into account: as we will detail in the ESG Risk Ratings chapter, once management is factored into the equation, the ISS subindustry moves quickly up the risk curve.

The ISS subindustry ranks 59th out of 138 subindustries in ESG risk exposure

With an average exposure score of 36, the ISS subindustry ranks 59th out of 138 subindustries covered by our ESG Risk Ratings. The ISS subindustry's gross risk profile is similar to that of the Biotechnology and Technology Hardware subindustries, as shown in Figure 4. Average subindustry exposure scores across our full ESG Risk Ratings coverage universe range from a high of 72 for Integrated Oil & Gas to a low of 15 for Distribution, also shown in Figure 4.

Figure 4: Average exposure scores of selected subindustries*

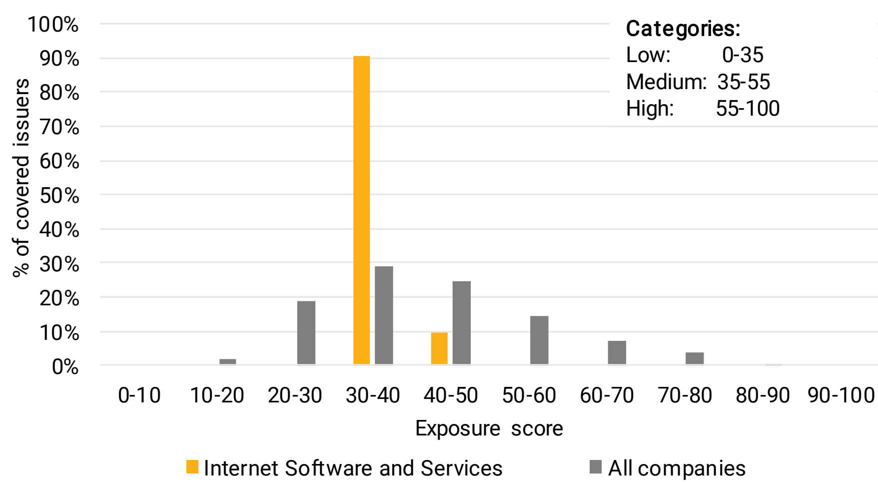


* As of October 2018 **Source**: Sustainalytics

Variation around the mean

A subindustry's average exposure score is a useful starting point in understanding exposure, but it is also instructive to consider the variation in company-level scores within a subindustry. Figure 5 compares the distribution of exposure scores within the ISS subindustry against our complete ESG Risk Ratings coverage universe on the full 100-point exposure score scale. As it turns out, there is remarkably little variation in the ESG risk exposure of ISS companies. Over 90% have an exposure score that falls in the 30-40 range, compared to less than one-third (29%) of companies from our full coverage universe. It is also notable that there are no ISS companies with a high exposure score (i.e. an exposure score between 55 and 100). Across our full ESG Risk Ratings coverage universe, 18% of companies fall into this risk category.[5]

Figure 5: Distribution of exposure scores*



* As of October 2018 **Source**: Sustainalytics

Material ESG issues (MEIs)

Linking MEIs to potential financial risks

In this section, we pick up on the MEIs from Figure 3 and discuss the financial risks they pose for ISS firms. The average exposure scores for these MEIs range from nine (Corporate Governance) to two (Product Governance).

Corporate Governance – foundational importance

A standalone building block in the ESG Risk Ratings

Corporate Governance is an MEI across all subindustries, including ISS, due to the foundational role that governance pillars, including board composition, structure and experience, play in managing ESG risks. As explained on p. 43 of *Moving up the Innovation Curve: White Paper – Volume 1*, the Corporate Governance MEI has a fixed subindustry exposure score of 9 that applies to all publicly listed companies in the ESG Risk Ratings (and 5 for non-public companies).[6]

Foundational shifts in funding models

In the context of the ISS subindustry, corporate governance is important due to foundational shifts in the way that start-up technology companies are funded. Over the past 20 years, the growth of secondary market funding and acquisitions have reduced the need for start-ups to exit via an initial public offering (IPO) strategy. This trend has reduced the incentive for venture funds to insist on installing professional CEOs.[7] Furthermore, venture capital funds face fierce competition for deals, leading them to negotiate terms such that founders retain a high level of control. The result is voting rights for founders that significantly reduce accountability and transparency for public investors.

Two-thirds of venture-backed technology IPOs had super voting shares

This trend is especially prominent for technology-driven subindustries, including ISS. In May 2018, The Wall Street Journal reported 67% of venture-backed technology IPOs in 2017 had super voting shares compared to just over 10% for companies in other sectors.[8] The power of company founders to dictate management and company direction can be a liability for public investors.

Data Privacy and Security – omnipresent risk

Data Privacy and Security has an average exposure score of 8

As shown in Figure 3, Data Privacy and Security has an average exposure score of 8. Together with Corporate Governance and Human Capital, it is the MEI of greatest significance for investors in the ISS subindustry. Notably, it also has the greatest range in exposure scores at the company level, indicating substantial risk differentials among ISS firms. This gap can be seen in the yellow bar for Data Privacy and Security in Figure 3, which ranges from a maximum exposure score of 12.0 (for Naver Corporation and Alphabet) to a minimum of 6.4 for four firms: Autohome Inc., Momo Inc., NetEase, Inc. and YY Inc. Figure 6 displays subindustry peers with the five highest and lowest issue exposure scores.[9]

New drivers of financial value

The nature of this issue's financial materiality is that collecting personal data has become one of the most significant drivers of financial value for ISS firms. Companies in this subindustry generate significant revenues from collecting and monetizing consumer data, typically though advertisements. Revenue from advertising is generally more than 50% of total revenues for firms in the subindustry and can be as high as 98% (e.g. Facebook).[10]

Figure 6: Exposure scores, Data Privacy and Security*

Highest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Naver Corporation	South Korea	24,531	12.0	27.0
Alphabet	US	817,117	12.0	25.6
Facebook	US	543,067	10.8	29.6
Shopify	Canada	12,811	9.6	31.2
Gaming Innovation Group	Malta	627	9.2	34.2

Lowest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Autohome	China	9,651	6.4	23.6
YY	China	8,382	6.4	25.0
NetEase	China	42,024	6.4	25.9
Momo	China	6,261	6.4	26.5
Tencent Holdings	China	558,668	6.8	21.7

* As of October 2018

Source: Sustainalytics

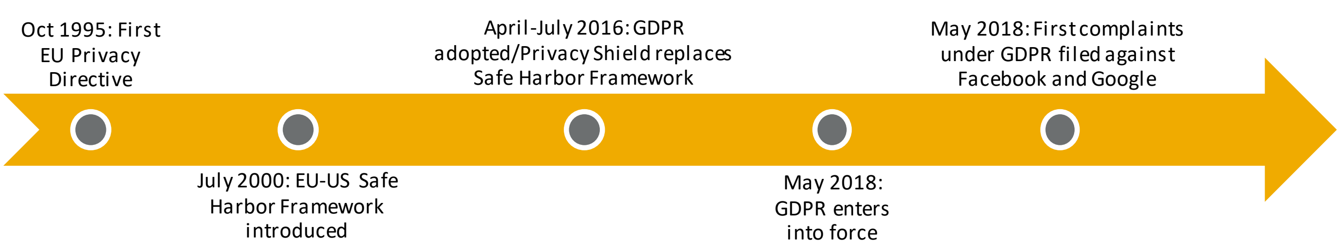
The data supply chain exposes companies to myriad risks

The data supply chain in this subindustry is often complex, as companies tend to be both data aggregators and distributors. Companies aggregate user information on their platforms and often use tracking mechanisms to collect user data while the users are on other websites. Trackers are generally embedded in websites, apps, and in some cases, location-based services. This data and associated behavioural insights are primarily used for ad targeting but can also be provided to other third parties.

Financial and reputational penalties

As the upside of personal data grows, so too does the downside risk associated with the management of data security and privacy. The Cambridge-Analytica controversy, which is estimated to have cost Facebook USD 100bn in market capitalization at the height of the crisis and contributed to the company missing its Q2 2018 earnings per share and revenue targets,[11] dramatically illustrates the financial and reputational penalties that can result from the mismanagement of personal data.[12]

Figure 7: A timeline of European data privacy regulations



Source: Sustainalytics

Tightening regulation

Regulators are responding to the growing spectre of data privacy and security risk by tightening relevant laws and regulations, notably through the General Data Protection Regulation in the EU, as shown in Figure 7.[13] While such moves may reduce companies' risk exposure in the long run, they impose substantial compliance costs and potential financial penalties.

Human Capital – pressure to attract and retain talent

Less variation in company-level exposure scores

As shown in Figure 3, Human Capital has an average exposure score of 7.9. Together with Corporate Governance and Data Privacy and Security, it is the MEI of most financial significance in the ISS subindustry. Company-level exposure scores are relatively clustered on this MEI and exhibit less variation than on the Data Privacy and Security MEI. Figure 8 displays subindustry peers with the five highest and lowest issue exposure scores on the Human Capital MEI.[14]

Figure 8: Exposure scores, Human Capital*

Highest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Facebook	US	543,067	10.0	29.6
Alphabet	US	817,117	10.0	25.6
Shopify	Canada	12,811	9.2	31.2
Zillow Group	US	8,192	9.2	30.0
58.com	China	11,703	9.2	28.4

Lowest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Auto Trader Group	UK	4,890	7.2	21.3
VeriSign	US	11,328	7.2	22.6
Autohome	China	9,651	7.2	23.6
Moneysupermarket.com Group	UK	2,579	7.2	24.4
YY	China	8,382	7.2	25.0

* As of October 2018

Source: Sustainalytics

Crucial success factor

Human capital management is a crucial success factor for companies in the ISS subindustry. The adage that "employees are a company's greatest asset" wholly applies to firms in this subindustry, as their products and services are generated almost entirely from human ingenuity. Coupled with onerous growth expectations – technology companies are expected to achieve near consistent double-digit growth year over year – firms face enormous pressure to attract and retain top talent, particularly in the areas of technological capabilities (artificial intelligence, cybersecurity, etc.) and project management. Acquisitions, which are a vital part of company growth, also require companies to effectively integrate new employees, sometimes from companies with disparate corporate cultures.

Growing calls to increase gender diversity

At the same time, companies in the ISS subindustry, like other industries more broadly, face growing calls to increase gender diversity and close gender pay gaps. Many companies in this subindustry, including Alphabet, Facebook and Twitter, have faced high-profile gender discrimination class action lawsuits.[15] These and other incidents have contributed to the public's growing awareness of gender disparity and prompted many technology companies to rethink their approach to managing and reporting on diversity issues.

Business Ethics – growing antitrust concerns

Ethical violations can result in significant financial penalties

With an average exposure score of 5.9, Business Ethics poses less material risk to ISS firms than Corporate Governance, Data Privacy and Security and Human Capital. This is because the issue primarily relates to managing potentially negative consequences (e.g. tax evasion, anti-trust regulation), rather than impacting revenue generation. But this is not to say that ethical breaches cannot result in substantial monetary penalties or negative reputational effects. Google, for instance, was hit with a record USD 5bn fine from European antitrust regulators in July 2018 over its allegedly illegal deployment of its Android mobile operating system.[16] In another example, Facebook was fined USD 122mn in May 2017 after acknowledging it had violated European Commission rules concerning its acquisition of WhatsApp.[17]

Company-level exposure scores for Business Ethics are tightly clustered

Company-level exposure scores are tightly clustered on this MEI, with just 2.1 points separating the highest and lowest exposure scores. Figure 9 displays subindustry peers with the five highest and lowest issue exposure scores on the Business Ethics MEI.[18]

Figure 9: Exposure scores, Business Ethics*

Highest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Naver Corporation	South Korea	24,531	7.5	27.0
Alphabet	US	817,117	7.0	25.6
Shopify	Canada	12,811	6.9	31.2
Gaming Innovation Group	Malta	627	6.6	34.2
Zillow Group	US	8,192	6.6	30.0

Lowest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Auto Trader Group	UK	4,890	5.4	21.3
VeriSign	US	11,328	5.4	22.6
Autohome	China	9,651	5.4	23.6
Moneysupermarket.com Group	UK	2,579	5.4	24.4
YY	China	8,382	5.4	25.0

* As of October 2018

Source: Sustainalytics

Product Governance – exposure with social media

Substantial range in company-level exposure scores

The Product Governance MEI has an average exposure score of 3, which is the second lowest of the six MEIs in the ISS subindustry. However, the spread in company-level exposure, at 3.8, is significant and trails only that of Data Privacy and Security. Figure 10 displays subindustry peers with the five highest and lowest issue exposure scores on the Product Governance MEI.[19]

Inadequate controls can lead to a decline in user confidence

Product Governance for ISS companies involves a range of underlying issues, including media ethics, journalistic standards, responsible advertising, and quality of service issues. As mentioned above, many companies in this industry generate significant revenue from selling advertising space, and inadequate quality controls may result in a loss of customer and user confidence.

Figure 10: Exposure scores, Product Governance*

Highest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Baidu	China	85,737	6.0	29.6
Twitter	US	19,090	3.8	24.8
Facebook	US	543,067	3.6	29.6
Shopify	Canada	12,811	3.5	31.2
GoDaddy	US	7,498	3.5	26.0

Lowest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Autohome	China	9,651	2.3	23.6
YY	China	8,382	2.3	25.0
Momo	China	6,261	2.3	26.5
Match Group	US	9,567	2.3	27.6
Tencent Holdings	China	558,668	2.6	21.7

* As of October 2018

Source: Sustainalytics

Social networks expose companies to the issues of fake news and cyberbullying

Companies that offer platforms for social media, such as Facebook and Twitter, are further exposed to concerns around managing and enforcing community standards, particularly as they relate to offensive and hate speech, and the hot-button issues of fake news and cyberbullying. These issues raise obvious product governance questions and can lead to heightened regulatory scrutiny, reputational repercussions and negative financial effects for social media firms.

Carbon – Own Operations – a focus on data centres

A large and growing energy footprint

With an average exposure score of 2, Carbon – Own Operations presents less financial risk to ISS firms than all other MEIs. However, the issue is still a material concern for management teams, particularly in the context of rising energy demand at data centres. Data centres are currently responsible for about 3% of total global energy demand, and this proportion is likely to increase as more Internet-connected devices and services flood the market.[20]

Smallest variation in exposure scores of any MEI

In addition to having the lowest average exposure score, Carbon – Own Operations also has the smallest variation in company-level exposure scores, with a range of just 1 point. Figure 11 shows the subindustry peers with the five highest and lowest issue exposure scores on the Carbon – Own Operations MEI.[21]

Figure 11: Exposure scores, Carbon – Own Operations*

Highest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Shopify	Canada	12,811	2.7	31.2
Equinix	US	35,611	2.4	20.6
Akamai Technologies	US	11,331	2.3	20.9
eBay	US	42,389	2.3	19.7
Gaming Innovation Group	Malta	627	2.2	34.2

Lowest exposure

Company	Country	Mcap (USD mn)	Issue Exposure Score	ESG Risk Rating Score
Just Eat	UK	7,873	1.7	24.6
Auto Trader Group	UK	4,890	1.8	21.3
Tencent Holdings	China	558,668	1.8	21.7
VeriSign	US	11,328	1.8	22.6
Autohome	China	9,651	1.8	23.6

* As of October 2018

Source: Sustainalytics

Overall exposure scores – differing risk levels

An all-in measure of gross ESG risk exposure

By summing a companies' exposure score on each of the six MEIs we arrive at a companies' overall exposure score – an all-in measure of the gross ESG risk facing a company, before taking management and other factors into account. Figure 12 profiles the companies with the five highest and lowest overall exposure scores. The exposure scores range from a high of 43.2 (Alphabet) to a low of 32.1 (Autohome, YY and Momo).

Figure 12: Exposure scores, overall*

Highest exposure

Company	Country	Mcap (USD mn)	Overall Exposure Score	ESG Risk Rating Score
Alphabet	US	817,117	43.2	25.6
Facebook	US	543,067	40.9	29.6
Shopify	Canada	12,811	40.9	31.2
Naver Corporation	South Korea	24,531	40.9	27.0
Gaming Innovation Group	Malta	627	38.7	34.2

Lowest exposure

Company	Country	Mcap (USD mn)	Overall Exposure Score	ESG Risk Rating Score
Autohome	China	9,651	32.1	23.6
YY	China	8,382	32.1	25.0
Momo	China	6,261	32.1	26.5
NetEase	China	42,024	32.7	25.9
VeriSign	US	11,328	33.3	22.6

* As of October 2018

Source: Sustainalytics

Beta adjustments

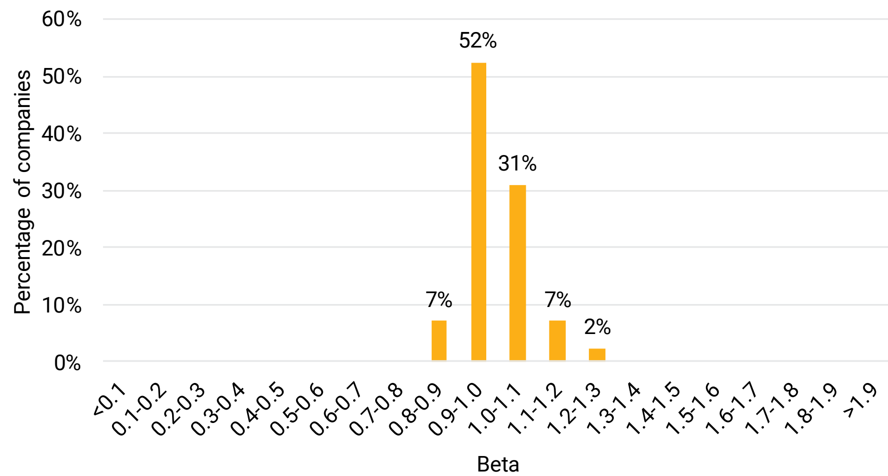
Subindustry peers can still exhibit significant differences

Sustainalytics' subindustry classification is a relatively granular measure: as mentioned above, companies in our ESG Risk Ratings coverage universe fall into one of 138 subindustry categories. However, while companies within a given subindustry are broadly comparable, they can still exhibit significant differences, which can in turn affect their MEI exposure.

Betas adjust for company-specific idiosyncrasies

For instance, subindustry peers can have a different business model, segment focus, location of operations and historical track-record with ESG controversies, all of which can influence a company's relationship with MEIs. In the ISS subindustry, pertinent considerations include the extent of a company's involvement in social media and the proportion of total revenue stemming from online advertisements. As explained on p. 23 of *Moving up the Innovation Curve: White Paper – Volume 1*, the ESG Risk Ratings use the concept of "betas" to adjust for these differences and capture a company's total risk exposure.[22]

Figure 13: Beta distribution in the ISS subindustry*



* As of October 2018 **Source**: Sustainalytics

Most firms are clustered around the subindustry norm

Figure 13 shows that most ISS firms are tightly clustered around a beta value of 1, indicating risk exposure that is in line with subindustry norms. Over three-quarters (83%) of the subindustry has a beta between 0.9 and 1.1. This distribution approximates the general pattern across our full ESG Risk Ratings coverage universe of approximately 4,400 companies, where 98% of companies have a beta that is clustered around 1.

Alphabet has a beta of 1.2

Moving to the left of the risk curve, three firms, representing 7% of the ISS subindustry, have a beta between 0.8 and 0.9. Moving to the right of the risk curve, an additional 7% have a beta of between 1.1 and 1.2, and 2%, representing a single firm, Alphabet, have a beta between 1.2 and 1.3. Alphabet's overall beta of 1.2 is driven by the company's exposure to Data Privacy and Security (issue beta of 1.5), Human Capital (issue beta of 1.3) and Business Ethics (issue beta of 1.2). Alphabet is the world's largest search engine, heavily reliant on advertising revenue, and in fierce competition for talent. These factors, along with others, contribute to higher exposure for the company.

ESG Management

Assessing risk management mechanisms

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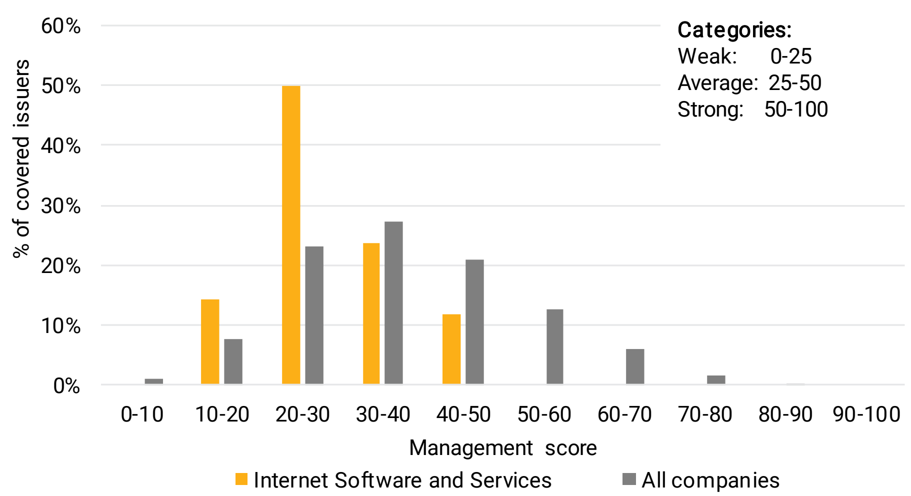
One of the bedrock ideas behind Sustainalytics' ESG Risk Ratings is that some subindustries (and companies) are inherently riskier than others from a financially material ESG perspective. This risk level is captured in the exposure score, which we discussed above in the context of the ISS subindustry. Yet exposure is only half of the story – the other major dimension in the ESG Risk Ratings is the concept of management, which comprises an assessment of a company's ability and success in managing its material ESG and Corporate Governance issues, and a company's involvement in controversies. This evaluation plays a critical role, as companies with robust management programmes and policies, and a track-record of improving their ESG performance or reducing their involvement in controversies (or both) may be able to adequately manage even relatively high ESG risk exposure.

ISS firms have below average ESG management scores

The ISS subindustry is a generally weak performer in ESG management. As shown in Figure 14, half (50%) of the subindustry falls into the 20-30 management score bin, which splits our weak and average management categories.[23] Just 23% of companies across our full ESG Risk Ratings universe fall into this bin. Moreover, 14% of the subindustry (six of 42 firms) fall into the 10-20 bin, compared to 8% for our full ESG Risk Ratings universe. And at the upper end of the spectrum, no ISS firms fall into any of the 50+ bins, which we consider to be reflective of strong management. Twenty percent of companies across our full coverage universe have a management score above 50.

Figure 14: Distribution of management scores*



* As of October 2018

Source: Sustainalytics

We suspect part of this performance gap is the result of the ISS subindustry's life cycle: ISS companies are relatively young, with an average founding year of 1999 compared to 1964 for all companies across our full ESG Risk Ratings

ISS firms have an average founding year of 1999

coverage universe. Younger companies have typically had less experience in conducting materiality consultations and integrating ESG considerations into their corporate strategy. And as mentioned above, management scores need to be interpreted alongside exposure scores, which for the ISS subindustry are below average. Nevertheless, this analysis underscores the relatively modest ESG risk management mechanisms at play in the ISS subindustry.

Unpacking management

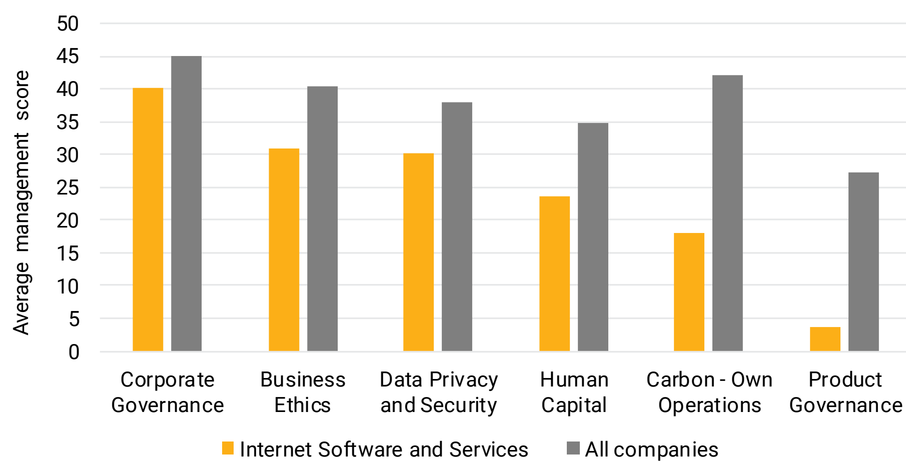
The ISS subindustry trails on all six MEIs

Figure 15 compares the average management scores of ISS companies and companies from our full ESG Risk Ratings universe on the six MEIs discussed above. The ISS subindustry underperforms the broader universe on all six MEIs, but the gap is more significant on some MEIs than others. Corporate Governance is an area of relative strength for ISS firms: the subindustry's average management score of 40 only narrowly trails the universe-wide average of 45.

Particularly significant delta with Carbon – Own Operations and Product Governance

On the Data Privacy and Security MEI, which is the second most important MEI for ISS firms from a risk exposure point of view, the ISS subindustry trails the universe-wide average by 8 points (average management score of 30 compared to a universe-wide average of 38). The delta runs as high as 24 on the MEIs of Carbon – Own Operations (average management score of 18 compared to a universe-wide average of 42) and Product Governance (average management score of 4 compared to a universe-wide average of 27). These two MEIs represent striking areas of management weakness for the ISS subindustry.

Figure 15: Average management scores per MEI*



* As of October 2018 **Source**: Sustainalytics

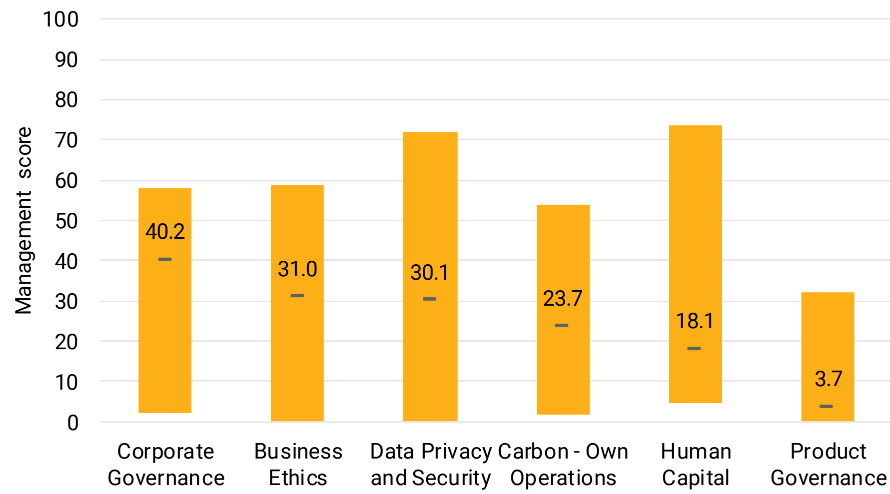
Leaders in the ISS subindustry

However, this is not to say that there are no leaders within the ISS subindustry on these issues. Figure 16 shows the spread in company management scores on each of the six MEIs for the ISS subindustry. The widest range is found with Data Privacy and Security. The leader, Tencent Holdings, has a score of 72, which is nearly 2.5x the ISS average of 30 and 2x the universe-wide average of 38.

Alphabet has exceptionally strong management of Carbon – Own Operations

On the Carbon – Own Operations MEI, the ISS leader, Alphabet, has a management score of 74, which is largely driven by the company's energy efficiency profile and use of renewable energy in data centres. This score is well above both the ISS subindustry average (30) and the universe-wide average (42).

Figure 16: Spread of management scores per MEI in the ISS subindustry*



* As of October 2018 **Source**: Sustainalytics

Overall management scores – large spread

Wide range of overall management scores

Figure 17 shows the companies with the five highest and lowest overall management scores. The firms best equipped to manage the ESG risk exposure that they face include eBay, Equinix, Alphabet, Akami Technologies and Scout24 AG. While none of these companies has an exemplary management score compared to best practices across our full ESG Risk Ratings coverage universe, they are leaders within the ISS subindustry. Companies at the other end of the management spectrum include Gaming Innovation Group, DeNa Co, United Internet AG, NetEnt AB and Momo.

Figure 17: Management scores, overall*

Highest management score

Company	Country	Mcap (USD mn)	Management Score	ESG Risk Rating Score
eBay	US	42,389	49.1	19.7
Equinix	US	35,611	47.1	20.6
Alphabet	US	817,117	44.0	25.6
Akamai Technologies	US	11,331	43.6	20.9
Scout24 AG	Germany	4,923	40.9	22.9

Lowest management score

Company	Country	Mcap (USD mn)	Management Score	ESG Risk Rating Score
Gaming Innovation Group	Malta	627	12.4	34.2
DeNA Co	Japan	3,139	14.7	29.9
United Internet AG	Germany	14,657	15.4	31.8
NetEnt AB	Sweden	1,365	16.4	28.5
Momo	China	6,261	18.5	26.5

* As of October 2018 **Source**: Sustainalytics

ESG Risk Ratings

Combining exposure and management

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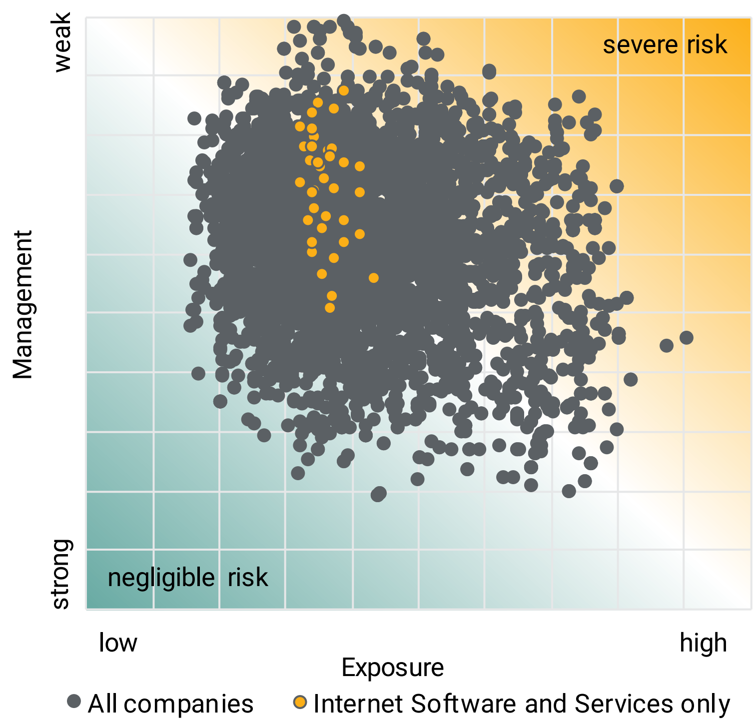
Figure 18 plots companies in the ISS subindustry (yellow dots) and companies across our full ESG Risk Ratings universe (grey dots) on a matrix that combines ESG risk exposure and ESG management scores. ISS companies are generally clustered in the top left quadrant, which indicates generally low risk exposure and generally weak management, which were two of the key findings from our earlier discussions of these dimensions.

Figure 18: Plotting exposure and management scores*



* As of October 2018

Source: Sustainalytics

Management scores have much higher variability

The high variability of management scores among ISS firms is also evident in the string bean-like distribution of yellow dots in Figure 18. Management scores in the ISS subindustry have a standard deviation of 8.9. Exposure scores, by contrast, are much less variable with a standard deviation of 2.6. This profile means that any two peers in the ISS subindustry are likely to differ much more significantly in their management of ESG risk, rather than their gross ESG risk exposure per se.

Unmanageable risk

While exposure and management are the two major drivers of the ESG Risk Ratings, there is an additional measure that is required to determine the final scores. Unmanageable risk is that part of a company's ESG risk exposure that

Some portion of ESG risk exposure is simply unmanageable

cannot be managed away. For instance, the long-term, systemic pivot to renewable energy means that a portion of the risk associated with MEIs, including Carbon – Own Operations, cannot be managed, irrespective of the depth or sophistication of management's carbon policies or programmes.

4% of ESG risk exposure in the ISS subindustry cannot be managed away

In the case of the ISS subindustry, 4% of the industry's ESG risk exposure is regarded as unmanageable. This assessment stems from the ever-present concern of hacking by external actors, which is reflected in the relatively low manageable risk factor (MRF) of 80% in the Data Privacy and Security MEI, and the inability of organizations to fully monitor the decision-making of every employee, which is reflected in the MRF of 95% for the Business Ethics MEI.

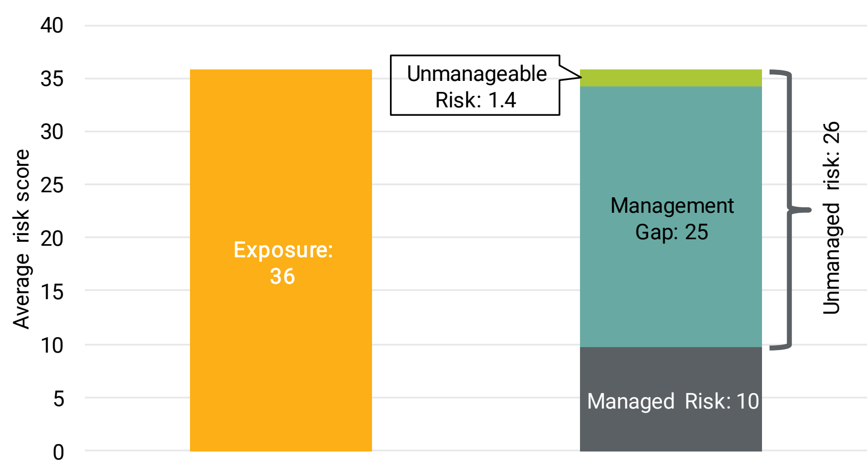
Gauging unmanaged risk

72% of the ISS subindustry's risk exposure is unmanaged

The 4% of unmanageable risk is expressed in Figure 19 as a share of the ISS subindustry's total exposure score of 36 (36*4%= 1.4). Unmanageable risk is one of two components of unmanaged risk, which, as we will see below, is synonymous with a company's ESG Risk Rating. The other component of unmanaged risk is the management gap, which represents the risk exposure that could be managed by a company through programmes, policies and suitable initiatives, but, for whatever reason, is not. In the case of the ISS subindustry, the management gap is 25.[24] This means that the total unmanaged risk in the ISS subindustry is 26, or 72% of the subindustry's total exposure ((26/36)*100=72%).

This 72% figure is relatively high: in a typical subindustry across our full ESG Risk Ratings universe, 65% of ESG risk exposure is unmanaged.[25]

Figure 19: Unmanaged risk in the ISS subindustry*



* As of October 2018

Source: Sustainalytics

ESG Risk Ratings – the key insight

Significant variation in ESG Risk Rating scores

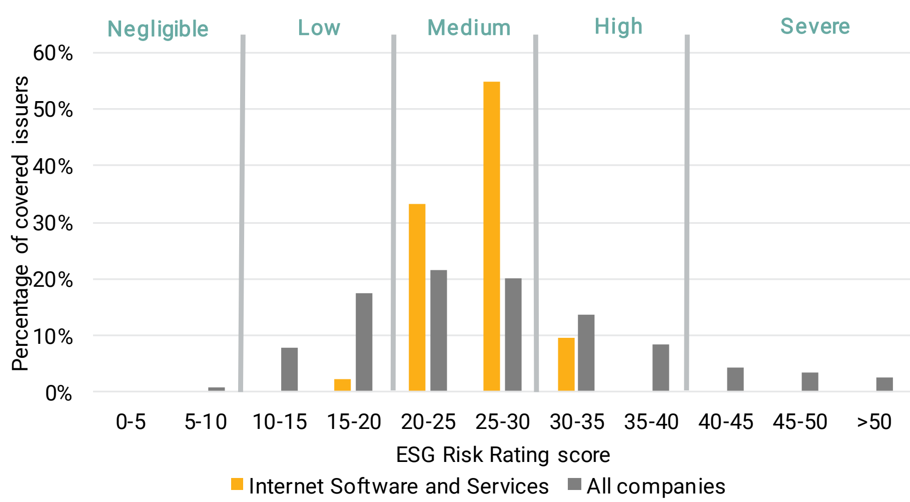
ISS firms have an average ESG Risk Rating score (which is synonymous with unmanaged risk) of 26, which is in line with the average ESG Risk Rating score across of full universe of 27. But as shown in Figure 20, the variation in company scores is significant. Company-level ESG Risk Ratings range from a low of 19.7

(eBay) to a high of 34.2 (Gaming Innovation Group), with a standard deviation of 3.1. This compares to a standard deviation of 9.7 in ESG Risk Rating scores across our full coverage universe.

Nearly 90% of ISS firms are medium risk

Most ISS companies (88%) fall in the medium risk category, with 55% at the riskier end of this category (score between 25-30). The ISS subindustry has a higher proportion of firms in the medium risk category than is typical across our full ESG Risk Rating universe, where 44% of companies have a score between 20-30. The average ESG Risk Rating across our full ratings universe is 26.9.

Figure 20: Distribution of ESG risk rating scores in the ISS subindustry*



* As of October 2018 **Source**: Sustainalytics

Only one ISS company, eBay, falls into the low risk category

A single company, eBay, representing 2% of the ISS subindustry, falls into the low risk category, with an ESG Risk Rating score of 19.7. At the other end of the risk spectrum, 10% of the subindustry falls into the high-risk category. Figure 21 shows the subindustry peers with the five highest and lowest ESG Risk Ratings.

Figure 21: ESG risk ratings in the ISS subindustry*

Highest unmanaged risk

Company	Country	Mcap (USD mn)	ESG Risk Rating Category	ESG Risk Rating Score
Gaming Innovation Group	Malta	627	High	34.2
United Internet AG	Germany	14,657	High	31.8
Shopify	Canada	12,811	High	31.2
Zillow Group	US	8,192	High	30.0
DeNA Co	Japan	3,139	Medium	29.9

Lowest unmanaged risk

Company	Country	Mcap (USD mn)	ESG Risk Rating Category	ESG Risk Rating Score
eBay	US	42,389	Low	19.7
Equinix	US	35,611	Medium	20.6
Akamai Technologies	US	11,331	Medium	20.9
Auto Trader Group	UK	4,890	Medium	21.3
Tencent Holdings	China	558,668	Medium	21.7

* As of October 2018 **Source**: Sustainalytics

Case Study - Facebook

Capturing insights from the ESG Risk Ratings

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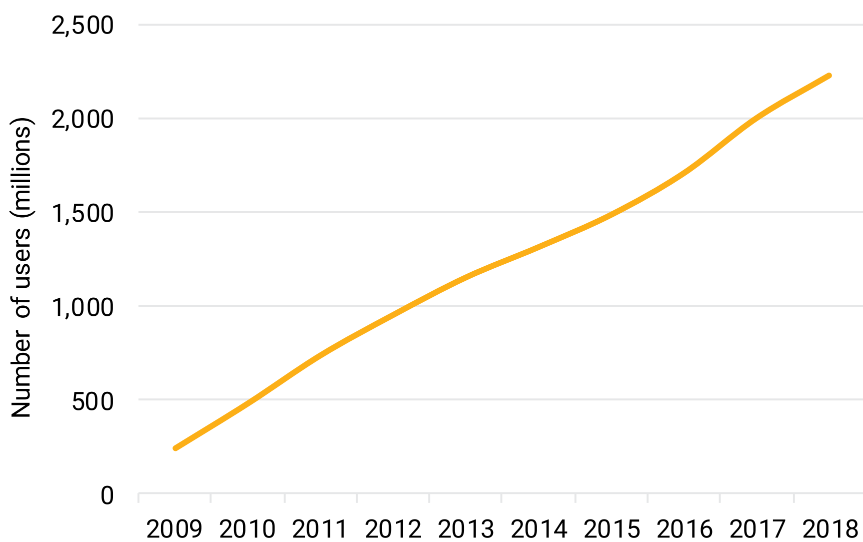
To complete this white paper, we offer an ESG Risk Ratings deep dive on Facebook. Facebook is an instructive case study because, on the one hand, the company is one of the world's most high-profile and economically important internet service companies. On the other, it has been caught up in numerous data privacy and security controversies, including the Cambridge-Analytica data scandal, which was a watershed moment in the market's awareness of the growing risks posed by the collection of personal data. And as data privacy and security issues are carefully captured in the ESG Risk Ratings, the Facebook case study also demonstrates the flexibility and materiality focus of our new ratings framework.

Background – steady growth in active users

Facebook is the world's largest social network. The company owns multiple platforms, including its flagship brand, WhatsApp, Instagram, Messenger and Oculus VR. In 2017, Facebook hit the two billion monthly active user threshold, up 17% from 2016, and over 700% since 2009.[26] As of Q2 2018, the company has 2.2 billion active monthly users, as shown in Figure 22.

Figure 22: Worldwide monthly active Facebook users, 2009-2018



Source: statista[27]

Business Model – advertising revenues dominate

98% of Facebook revenues come from advertising

Facebook depends heavily on advertising revenues, which constituted 98% of total company revenues in 2017.[28] The company's business model is to utilize customer data to provide advertisers with unparalleled insights into consumer behaviour and targeted advertisements on its product platforms.

Exposure – above average risk

Medium risk exposure

Facebook's overall exposure score, an all-in measure of the gross ESG risk facing a company, is 40.9, which falls in the medium exposure category (exposure scores between 35-55).

Beta factors

Beta factors reflect company-specific circumstances

One of the key strengths of the ESG Risk Ratings is that they differentiate exposure based on company-specific circumstances. Beta factors allow us to isolate the key drivers of Facebook's excess exposure. In this case, Facebook's heavy reliance on customer data and its employees' ingenuity suggest that Data Privacy and Security and Human Capital are the MEIs that pose the most risk to the company's enterprise value. This assessment is reflected in Facebook's beta factors, as shown in Figure 23.

Facebook's overall beta is 1.1

Facebook's overall beta is 1.1, indicating gross exposure that is roughly 10% higher than the subindustry average of 35.8.

Figure 23: ESG exposure of Facebook vs the ISS subindustry*

MEI	Average exposure score, ISS	Issue beta, Facebook	Exposure score, Facebook	Rationale
Corporate Governance	9.0	-	9.0	Corporate Governance is the foundational pillar of the rating and remains constant across subindustries and companies.
Data Privacy and Security	8.0	1.4	10.8	Facebook is heavily exposed on this MEI due its strong reliance on advertising (98% of revenues) and aggressive data monetization strategy.
Human Capital	7.9	1.3	10.0	Facebook faces high human capital risk exposure given the diversified nature of its product pipeline, which includes both software and hardware.
Business Ethics	5.9	1.0	5.7	Facebook's exposure is relatively low since it's not involved in any sensitive industries or jurisdictions where corruption and bribery risks are elevated.
Product Governance	3.0	1.2	3.6	Facebook's exposure is elevated primarily due to the fact that it is the world's largest social network, giving its product incredible influence.
Carbon - Own Operations	2.0	0.9	1.8	Facebook's risk is reduced because its physical infrastructure is limited to office space and data centers mostly powered by renewable energy.
Overall	35.8	1.1	40.9	Facebook's overall exposure score of 40.9 is above average for the ISS subindustry.

*As of October 2018

Source: Sustainalytics

Management – middle of the pack

Average overall management

Facebook's overall management score is 29.8, which is slightly above the ISS subindustry average of 28.7. Facebook significantly trails the subindustry leader, eBay, which has an overall management score of 49.1, but is well ahead of companies at the bottom end of our management assessment (e.g. Gaming Innovation Group and DeNA Co).

Leader on Carbon – Own Operations and Human Capital

As shown in Figure 24, Facebook is a management leader on several MEIs. On Carbon - Own Operations, Facebook's management score of 50.1 is 32 points above the subindustry average of 18.1. Facebook's strong management of this issue is reflected in the company's robust renewable energy programmes and declining carbon intensity. Facebook also has above-average management of

Human Capital, due in part to its progressive diversity reporting, a leading parental leave policy and share-based compensation policies.[29]

Facebook trails industry peers on its management of Business Ethics and Corporate Governance

Weaknesses for Facebook include Corporate Governance and Business Ethics, where the company's management score of 6.6 trails the subindustry average by over 24 points and the average score across our full ESG Risk Ratings universe by over 33 points. Facebook's performance gap on these MEIs is mostly due to a lack of appropriate policies, specifically anti-bribery and corruption policies, as well as ongoing controversies surrounding business ethics and accounting practices.

Figure 24: ESG management of Facebook vs the ISS subindustry*

MEI	Average management score, ISS	Manageable risk factors, ISS	Management score, Facebook
Corporate Governance	40.2	100%	18.9
Business Ethics	31.0	95%	6.6
Data Privacy and Security	30.1	80%	31.9
Human Capital	23.7	95%	53.7
Carbon - Own Operations	18.1	100%	50.1
Product Governance	3.7	100%	13.9
Overall	28.7	-	29.8

*As of October 2018 **Source:** Sustainalytics

Manageable Risk Factors (MRFs)

Unmanageable risk accounts for 10% of Facebook's rating

As explained earlier, management scores also incorporate MRFs. MRFs are set at the subindustry level and reflect long-term risks that cannot be mitigated by company management, as long as the company stays in the same line of business. As shown in Figure 24, MRFs play a particularly important role for Facebook and its ISS peers in the context of Data Privacy and Security. The MRF for this MEI is set at 80% to reflect the limitations that companies face related to privacy and cybersecurity governance. Regardless of how well a company manages this issue, there are certain elements beyond its control, namely the actions of malicious entities looking to gain access to its systems and proprietary data.

ESG Risk Ratings – measuring unmanaged risk

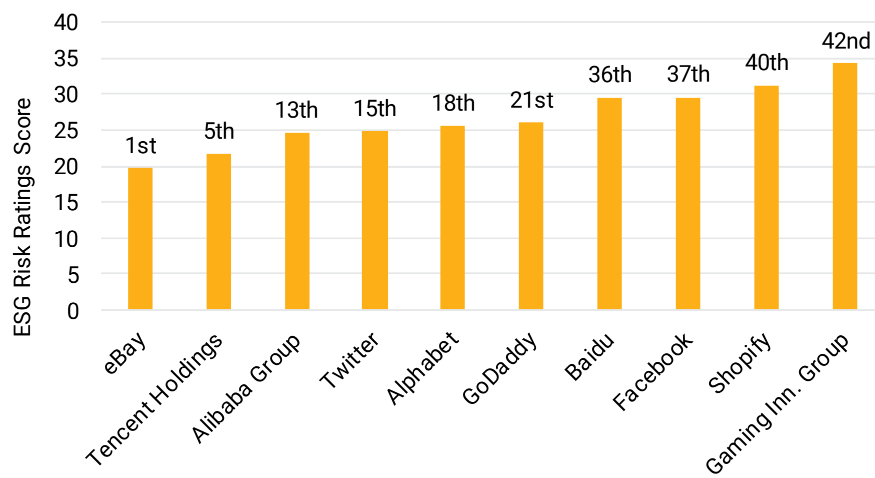
Medium unmanaged risk

The central findings of our analysis so far are that i) Facebook faces relatively high gross ESG risk exposure compared to its ISS peers and ii) the company has a slightly better than average handle on this exposure from a management point of view. When we combine these two dimensions, we are left with Facebook's ESG Risk Rating, which is a single, all-in measure of the degree to which the company is managing ESG risks that we believe pose hazards to the company's enterprise value.

Facebook ranks 37th out of 42 firms in the ISS subindustry

Facebook's ESG Risk Rating score is 29.6, which puts the company 37th out of 42 firms in the ISS subindustry, as shown in Figure 25. Moreover, Facebook's absolute score of 29.6 sits on the extreme outer edge of our medium risk category, and Facebook is on the cusp of moving into the basket of high-risk companies with ESG Risk Rating scores that range from 30-40 (22% of companies across our full ESG Risk Ratings universe fall into this category).

Figure 25: ESG Risk Ratings of selected ISS companies*



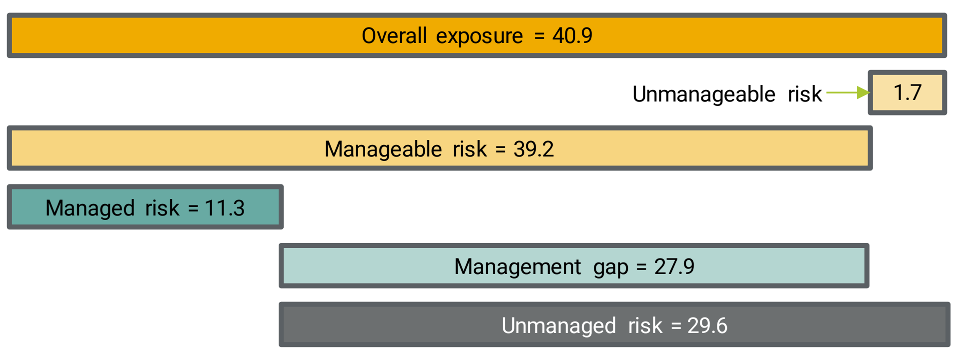
* As of October 2018 **Source**: Sustainalytics

Risk decomposition

Arriving at Facebook's unmanaged risk score

Figure 26 shows the architecture of the ESG Risk Ratings and how the various components coalesce to arrive at unmanaged risk. As mentioned earlier, Facebook's overall exposure is 40.9. Exposure is then clawed back by the amount of unmanageable risk, which in Facebook's case is 1.7 points, or 4% of overall exposure. This leaves 39.2 points of manageable risk. As Facebook is currently managing 11.3 points (roughly 29%) of its manageable risk, this yields a management gap of 27.9 points. When we add back the 1.7 points of unmanageable risk, we arrive at Facebook's unmanaged risk score of 29.6.[30]

Figure 26: Decomposing Facebook's unmanaged risk score*



* As of October 2018 **Source:** Sustainalytics

MEIs

Facebook is an above-average performer on Carbon – Own Operations and Human Capital

While Facebook sits towards the risky end of the ISS subindustry in terms of its overall ESG Risk Ratings score, it is not a uniformly poor performer on all MEIs for the ISS subindustry. It ranks fifth on the issue of Carbon – Own Operations and sixth on the issue of Human Capital, for instance. The company's strong performance on these MEIs matches its notable management initiatives in these areas, which were discussed earlier. The major drag on Facebook's ESG Risk Ratings score is the company's exceptionally poor performance on the Data Privacy and Security MEI.

Data Privacy and Security – a hot-button issue

Facebook ranks 40th out of 42 peers on Data Privacy and Security

Out of all of Facebook's material ESG issues, Data Privacy and Security clearly stands out as the one of highest concern. Facebook's unmanaged risk score on this MEI is 8.1, which ranks 40th out of 42 companies in the ISS subindustry and is substantially higher than the subindustry average of 6.0. In our view, Facebook faces severe unmanaged risk on this issue. In the pages that follow, we explore how data privacy and security issues threaten Facebook's enterprise value and summarize how these issues are captured in our ESG Risk Rating model.

Enterprise value at risk

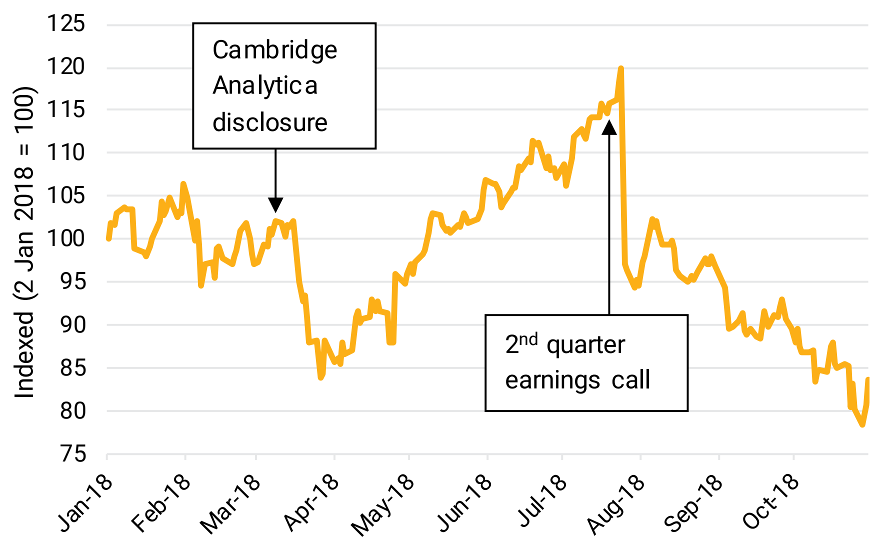
Conflicted business model?

Facebook is an indicative example of how an intangible factor, such as data privacy, can put enterprise value at risk. As mentioned earlier, Facebook's business model relies heavily on advertising revenue, which is driven in large part by the promise to advertisers that it can target specific demographics based on Facebook's extensive data. This can at times place Facebook's business interests (collecting and selling user information) in conflict with the interests of its users (strong privacy protections).

Data Privacy and Security issues hit home

Management gaps in this issue manifested in 2018 by precipitous drops in the company's share price (see Figure 27), brought on by concerns that the company's poor management of data privacy would negatively impact user growth, and therefore revenue growth.

Figure 27: Facebook's share price, January 2018-October 2018



Source: Nasdaq[31]

Exposure – upper end of risk spectrum

Double the exposure

The average exposure score within the ISS subindustry on the Data Privacy and Security MEI is 8, showcasing the importance of the issue to all ISS firms. However, Facebook's exposure score is 10.8, due to its beta of 1.35. This is one of the highest exposures in the subindustry, behind only Alphabet and Naver Corporation. Companies outside the ISS subindustry have an average exposure score of only 5.2, less than half that of Facebook.

Quantitative issue beta

Averaging four quantitative beta inputs

Facebook's beta of 1.35 on Data Privacy and Security is driven by two main considerations: a quantitative beta and a qualitative beta. The quantitative beta model includes four sub-components: product/production, financial, events and geographic locations. These four components are calculated, adjusted by a correction factor, and then averaged to arrive at the quantitative issue beta. As Facebook has a Category 4 Data Privacy and Security event, an additional step is taken to further increase the beta, as discussed below.

Figure 28: Sources of Facebook's quantitative beta

Beta sources	Value	Rationale
Product/Production	1.00	Default
Financial	0.60	Strong financial ratios compared to subindustry
Events	1.70	High level of controversies compared to subindustry
Geographic	1.05	Headquarted in countries with mature regulations
Quantitative issue beta	1.10	Average of the four components listed above

* As of October 2018 **Source:** Sustainalytics

Product/Production

A default value of 1

The product/production beta is set to 1 for the Data Privacy and Security MEI as a subindustry default, since betas are multipliers with an average of one for each of the issues and each subindustry. They reflect how a company's exposure score (either for an issue or overall) deviates from its subindustry's exposure score.[32]

Financial

Lower beta, stronger financial health

The financial beta component measures the relative financial strength of a company, and therefore its ability to adapt to changes in its operating environment, such as tightened regulations. A lower beta (lower exposure than average) maps to strong financial health.

Facebook performs well on in-house financial ratios

We use four in-house ratios to determine a company's financial strength: operating performance, solvency, financial flexibility and asset performance. As Facebook is a generally strong performer on these metrics compared to subindustry norms, this analysis yielded a beta component of 0.6.

Events

Factoring in events

This component compares a company's event track record against that of its peers in the subindustry, using the subindustry average and standard deviation. Companies that experience events at a higher rate than their peers may be prone to management lapses and increased scrutiny, which point to a higher beta and higher exposure. This analysis yielded a beta component of 1.7.

Leveraging Sustainalytics' Country Risk Monitor

Geographic Beta Component
Using Sustainalytics' Country Risk Monitor (CRM), we map countries to beta factors. In the case of Data Privacy and Security, a higher score on the CRM equates to higher exposure because we see regulatory penalties and customer awareness of the issue coming from countries with more advanced ESG regulations.

Focus on revenues

We use revenues rather than assets for the geographic beta component for Data Privacy and Security because the important factor is where users are located. Lastly, 20% of the weight is attributed to the company's headquarters to account for cultural influence. Facebook is headquartered in the US and reports revenues in the US and Rest of World. Using the CRM data and Facebook's revenue reporting, we calculate a final beta component of 1.05.

Increasing the beta to capture risks posed by severe events

Category 4 or 5 events
An extra layer of adjustment is put in place for Category 4 and 5 event assessments, reflecting and stressing the specific importance we attach to these cases in our assessment of a company's ESG risks. The algorithm we apply is relatively simple: it boosts the subindustry-specific exposure score for a given company by +1 if an event has been assessed as Category 4 and requires a minimum score of 6 in this case (for a Category 5 event assessment it is +2 and 8).

Explaining the calculation

Thus, we add 1 to the subindustry exposure score of 8, multiply it by the average of the four quantitative beta components and then divide the resulting company exposure by the original subindustry exposure. The calculation is as follows: 8+1=9*1.1 = 9.9/8=1.24).[33] This assessment signals our view that Facebook is somewhat more exposed to material risks from data privacy and security issues relative to its peers.

Qualitative issue beta

The qualitative overlay focuses on three factors

A second factor behind Facebook's issue beta of 1.35 involves a qualitative component. As explained on p. 26 of *Moving up the Innovation Curve: White Paper – Volume 1*, analysts have flexibility to implement an overlay to either amplify or dampen the result of the quantitative beta assessment.[34]

For Facebook, the analyst exercised the option of applying a qualitative overlay, and the company's beta increased from 1.24 to 1.35. The rationale for implementing the overlay is based on the following points:

- Facebook is significantly reliant on user data monetization. Trust in the brand is a critical feature for maintaining and increasing monthly active users.
- The context around data privacy has evolved considerably in the last five years towards stricter regulations. In the past, expanding data collection pathways meant more lucrative opportunities to monetize data assets. The recent regulatory shifts have made this profitable resource more akin to a stranded asset in many cases.
- Between 2014 and 2018, Facebook had frequent privacy-related investigations and lawsuits as well as data breaches, indicating a breakdown

in management systems.[35] Although this is captured in two ways in the quantitative beta component (the events component and the additional exposure from the Category 4 event), the quantitative component does not capture important nuances, such as momentum and erosion of user trust. This is especially true for a company like Facebook, for which brand is a decisive driver of the number of monthly active users.

Final issue beta

Combining quantitative and qualitative beta

Facebook's final issue beta of 1.35, composed of quantitative beta components and a qualitative analyst overlay, signals that, relative to its peers, Facebook's enterprise value is highly exposed to risks stemming from data privacy and security-related factors.

Management – multifactor assessment

Preparedness indicators

We assess management with three preparedness indicators

The next step in our assessment of Facebook's performance on the Data Privacy and Security MEI is to consider Facebook's management of its risk exposure. The first element in our management evaluation is preparedness, which includes three management indicators: data privacy policy, data privacy and security programme and data request management.

Defining performance indicators

The data privacy policy indicator assesses the data governance principles Facebook has in place. The data privacy and security programme indicator examines the disclosed mechanisms to enforce the principles outlined in the company's policy. The data request management indicator looks at how the company responds to government requests for data.

Differing weights

These indicators are weighted to reflect their relative importance in Facebook's overall management of data privacy and security issues. As shown in Figure 29, the data privacy and security programme indicator receives the highest weight (28%), followed by data privacy policy (13%) and data request management (10%). Overall, the Data Privacy and Security MEI is weighted 27.3%, making it the highest contributing MEI to the company's final rating.

Prevalence of events

Boosting the signal

The second element leverages Sustainalytics' incident tracking system and captures the number and type of events facing the company. As explained in Figure 2.11 of *Moving up the Innovation Curve: White Paper – Volume 1*, the event weights change dynamically and can compose up to 90% of a company's management score for MEIs, which is up significantly from Sustainalytics' previous flagship rating product.[36] Indeed, there was a deliberate attempt with the ESG Risk Ratings to amplify the signal from events, which serve as an insightful check on the efficacy of what are often poorly enforced management policies and programmes. In Facebook's case, 50% of the company's management score on the Data Privacy and Security MEI is driven by events, as shown in Figure 29.

Figure 29: Facebook's management score on Data Privacy and Security*

Indicator	Raw score	Weight	Weighted score
Data privacy policy	50	13%	6
Data privacy & security programme	75	28%	21
Data request management	50	10%	5
Events	Category 4	50%	0
Overall management score	-	-	32

* As of October 2018

Source: Sustainalytics

Performance summary

Facebook narrowly outperforms the subindustry average

A strength area for Facebook is the data privacy and security programme indicator, where Facebook receives a raw score of 75/100. The score represents industry best practices that include disclosure of C-level responsibility for the issue, regular privacy risk audits and measures to prevent security breaches. The company's performance on the other two preparedness indicators (50/100) is average for the subindustry. Facebook's overall management score, 32/100, is slightly above the subindustry average of 30.

Events point to management gaps

Where Facebook trails its peers most acutely is in events. Facebook's Category 4 Data Privacy and Security event poses problems in and of itself, but it also leads us to question the strength and enforcement of the company's privacy management systems.

Understanding events

Controversial activity at Facebook has increased regulatory scrutiny

Facebook's involvement in the Cambridge-Analytica scandal, which emerged in early 2018, led us to downgrade the company to Category 4 from Category 3, which had been in place since 2014. The controversy was one of the contributing factors to lower revenue projections by executives, which instigated a USD 120bn selloff.[37]

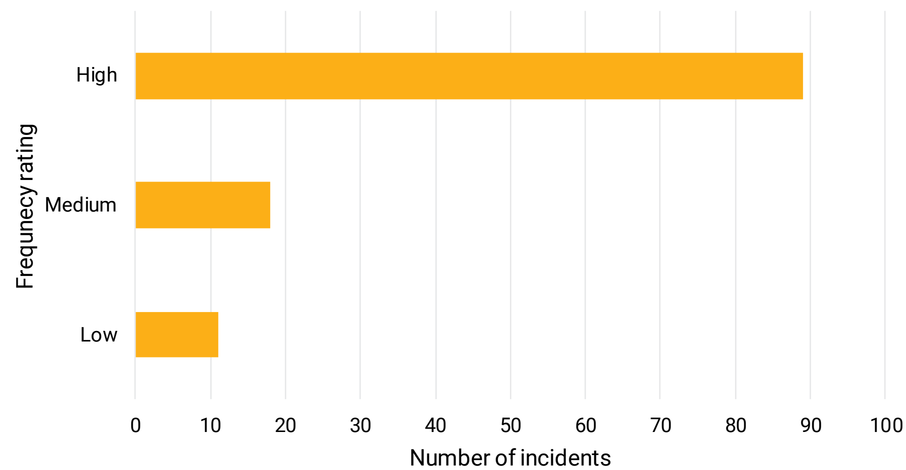
Multiple investigations and lawsuits

Facebook is now under multiple regulatory investigations over its data collection practices. The company is also facing an investor lawsuit in which it is alleged that it withheld material information regarding the Cambridge-Analytica case.[38] Regulators in the US, Canada, UK, Israel, India, Australia, Spain, Italy, Belgium, France and Germany have all initiated an investigation, fined the company or ordered the company to stop certain aspects of its data collection, noting in certain cases that Facebook's approach is in violation of local laws.[39]

Facebook has faced 118 data privacy and security incidents since 2012

Looking more closely at our incident data, since the beginning of 2012, we have catalogued a total 118 data privacy and security-related incidents at Facebook, well above industry norms. Figure 30 below shows that the majority (89) of the incidents we track for Facebook are labelled "high frequency." Frequency is a measure of the number of times an incident is reported. If a news item is of particular interest to the public, it will be republished by multiple news providers. Its republication both identifies important developments and propagates them, which in turn increases the audience and contributes to negative media exposure. This is an effective way to measure reputational risk, a key element of Facebook's overall risk quotient, given the importance of user trust to its revenue stream.

Figure 30: Incidents ranked by frequency*



* As of October 2018

Source: Sustainalytics

Manageable risk factors (MRFs)

The MRF for Data Privacy and Security is 80%

MRFs were addressed in the previous chapter and explained in detail on p. 36 of *Moving up the Innovation Curve: White Paper – Volume 1*.[40] They are set at the subindustry level and reflect long-term risks that cannot be mitigated by company management as long as the company stays in its current line of business. For Data Privacy and Security, the MRF is 80%. It is primarily a reflection of the risks from outside actors hacking or otherwise intercepting sensitive data. In practice, the MRF ensures that some of the exposure score (in this case, 20%) will translate directly into unmanaged risk. Data Privacy and Security has the lowest MRF (80%) in the subindustry, and the MEI has a significant weight in Facebook's scoring (MEI weight of 27.3%), increasing the effect of the MEI's MRF on Facebook's score.

The ESG Risk Rating signal

Facebook ranks 40th out of 42 in the ISS subindustry

As shown in Figure 31, Facebook's ESG Risk Rating score on the Data Privacy and Security MEI is 8.1, which puts the company 40th out of 42 companies in the ISS subindustry on this MEI. Facebook's score of 8.1 is substantially higher than the subindustry average of 6.0. There is another way to frame Facebook's poor positioning on this issue: among the 1,825 companies in our ESG Risk ratings universe for which Data Privacy and Security is a relevant MEI, Facebook ranks 1,823rd.

Figure 31: Facebook vs industry peers on data privacy and security

Company	Country	MCap (USD mn)	ESG Risk Rating Score	ESG Risk Rating Score, Rank	Data Privacy and Security, ESG Risk Rating	Data Privacy and Security, Rank
Tencent Holdings	China	558,668	21.7	5th	2.9	1st
Alibaba Group	China	524,173	24.6	13th	4.2	2nd
Twitter	US	19,090	24.8	15th	4.8	4th
Alphabet	US	817,117	25.6	18th	5.5	16th
Facebook	US	543,067	29.6	37th	8.1	40th

*As of October 2018

Source: Sustainalytics

Inherent risks in Facebook's business model

Facebook's business model, which relies heavily on advertising revenue, heightens the company's risk exposure on data privacy and security issues. Facebook's business interests (collecting and selling user information) can be in conflict with the interests of its users (strong privacy protections). The company's key value proposition is the unparalleled network it has created with billions of users whose online activities provide valuable behavioural insights that can be sold to advertisers. However, over the last year, it has come to light that Facebook's management of this issue has not been sufficient.

Translating into a single currency of risk

In summary, our ESG Risk Ratings model leads us to believe that Facebook faces severe unmanaged risk on the issue of Data Privacy and Security. This conclusion is a function of both high risk exposure and management gaps that we have identified through our model.

Conclusion

Identifying ESG Risk in the ISS subindustry

Key characteristics

Our exploration of the Internet Software and Services (ISS) subindustry has revealed several characteristics about the ESG risk exposure and management capabilities of ISS firms, both from an intra- and inter-industry point of view. Our initial finding that the ISS subindustry faces slightly less ESG risk exposure than is typical across our overall research universe was quickly tempered by our discussion of ESG management: the ISS subindustry as a whole has decidedly weak management of its risk exposure.

Relatively high proportion of unmanaged risk

Combining the exposure and management dimensions, we determined that a relatively high proportion of the ISS subindustry's exposure is unmanaged. In a typical subindustry across our full ESG Risk Ratings universe, 65% of ESG risk exposure is unmanaged. In the ISS subindustry, this figure is 72%.

Looking under the hood

Significant variation in company-level scores

This report also underscores the benefit of looking under the subindustry hood and considering the variation in company-level exposure, management and ESG Risk Rating scores. The spread in the ISS subindustry on some of these measures is dramatic: management scores, for instance, range from 12.4 to 49.1, with a mean of 28.7 and a standard deviation of 8.9.

Are investors aware?

With respect to ESG Risk Rating scores, which are synonymous with unmanaged risk, the values range from a low of 19.7 (eBay) to a high of 34.2 (Gaming Innovation Group). Many investors with exposure to the ISS subindustry are likely to be unaware of where their ISS holdings sit on this risk spectrum.

The risk rating in action

Capturing data privacy and security risk

The final chapter on Facebook reinforces the granularity of the ESG Risk Ratings model and shows how the framework is well-suited to capture financial risks flowing from the increasingly contentious ESG issue of data privacy and security. Facebook is highly exposed on this issue, and we expect that the company will continue to face significant challenges on this MEI going forward.

Looking ahead

The third and final instalment in our white paper series moves away from the universe-wide focus of *Moving up the Innovation Curve: White Paper – Volume 1*, where we provide a comprehensive discussion of the methodology, rating outcomes and portfolio backtesting, and the subindustry-specific focus of this report to examine the six use cases for investors offered by Sustainalytics' ESG Risk Ratings.

Appendix I

Company name	Country	Mcap (USD mn)	ESG Risk Rating	ESG Risk Rating Category	Exposure Score	Management Score
58.com Inc.	China	11,703	28.4	Medium	36.1	22.8
Akamai Technologies Inc	US	11,331	20.9	Medium	35.4	43.6
Alibaba Group Holding Limited	China	524,173	24.6	Medium	34.0	29.3
Alphabet Inc	US	817,117	25.6	Medium	43.2	44.0
Auto Trader Group PLC	UK	4,890	21.3	Medium	33.9	39.7
Autohome Inc.	China	9,651	23.6	Medium	32.1	28.0
Baidu, Inc.	China	85,737	29.6	Medium	38.5	24.6
Carsales.com Ltd	Australia	2,938	23.4	Medium	35.2	35.9
CoStar Group, Inc.	US	12,510	26.7	Medium	35.0	25.2
DeNA Co Ltd	Japan	3,139	29.9	Medium	34.7	14.7
eBay Inc	US	42,389	19.7	Low	36.5	49.1
Equinix Inc	US	35,611	20.6	Medium	36.8	47.1
Facebook Inc	US	543,067	29.6	Medium	40.9	29.8
Gaming Innovation Group Inc	Malta	627	34.2	High	38.7	12.4
GoDaddy Inc	US	7,498	26.0	Medium	38.5	34.5
IAC/InterActiveCorp.	US	11,957	29.0	Medium	36.7	22.3
Just Eat PLC	UK	7,873	24.6	Medium	35.8	33.7
Kakaku.com Inc	Japan	3,590	25.8	Medium	33.5	24.3
Kakao Corp	South Korea	9,985	26.4	Medium	35.5	27.2
LogMeIn Inc	US	6,622	26.6	Medium	34.7	24.7
Match Group, Inc.	US	9,567	27.6	Medium	34.1	20.3
Mercadolibre, Inc.	Argentina	17,093	23.8	Medium	34.1	32.3
Momo Inc	China	6,261	26.5	Medium	32.1	18.5
Moneysupermarket.com Group PLC	UK	2,579	24.4	Medium	33.9	29.9
MYOB Group Ltd	Australia	1,667	27.0	Medium	37.1	29.1
Naver Corporation	South Korea	24,531	27.0	Medium	40.9	36.7
NetEase, Inc.	China	42,024	25.9	Medium	32.7	22.1
NetEnt AB	Sweden	1,365	28.5	Medium	33.7	16.4
Opera Software ASA	Norway	440	28.4	Medium	36.6	23.7
Scout24 AG	Germany	4,923	22.9	Medium	37.0	40.9
Shopify Inc.	Canada	12,811	31.2	High	40.9	25.3
SINA Corporation	China	8,385	27.8	Medium	33.9	19.1
Tencent Holdings Ltd	China	558,668	21.7	Medium	33.9	38.3
Twitter, Inc.	US	19,090	24.8	Medium	38.6	38.1
United Internet AG	Germany	14,657	31.8	High	37.1	15.4
VeriSign, Inc.	US	11,328	22.6	Medium	33.3	34.4
Weibo Corp	China	28,663	26.8	Medium	33.7	22.0
XING SE	Germany	1,968	26.1	Medium	33.9	24.3
Yahoo Japan Corp	Japan	27,359	25.2	Medium	33.8	26.9
YY Inc	China	8,382	25.0	Medium	32.1	23.4
Zillow Group Inc	US	8,192	30.0	High	38.5	23.6
ZPG PLC	UK	2,125	24.8	Medium	35.6	32.5

Source: Sustainalytics

Appendix II

Glossary of Terms

Beta

See Issue Beta

Corporate Governance

A foundational building block (baseline) in the ESG Risk Ratings that applies to companies across all sectors and in every subindustry. A company's Corporate Governance practices can affect its ability to execute on its business strategy as well as its ESG strategy. Corporate Governance comprises six pillars (corporate governance pillars), indicating foundational structures that can contribute to the management of environmental and social risks.

Like material ESG issues, Corporate Governance is assessed via two dimensions: the exposure dimension and the management dimension. However, as exposure to Corporate Governance issues is not considered to be subindustry or company specific, a fixed exposure score of nine applies to all public companies regardless of subindustry, and company-specific betas are not applied to Corporate Governance exposure scores.

Corporate Governance Pillar

The six pillars that comprise the Corporate Governance assessment include: Board/Management Quality & Integrity; Board Structure; Ownership & Shareholder Rights; Remuneration; Audit & Financial Reporting; and Stakeholder Governance.

ESG Risk Category

A company's ESG Risk Ratings score is assigned to one of five ESG risk categories in the ESG Risk Ratings:

- negligible risk (overall score of 0-9.99 points): enterprise value is considered to have a negligible risk of material financial impacts driven by ESG factors;
- low risk (10-19.99 points): enterprise value is considered to have a low risk of material financial impacts driven by ESG factors;
- medium risk (20-29.99 points): enterprise value is considered to have a medium risk of material financial impacts driven by ESG factors;
- high risk (30-39.99 points): enterprise value is considered to have a high risk of material financial impacts driven by ESG factors;
- severe risk (40 and higher points): enterprise value is considered to have a severe risk of material financial impacts driven by ESG factors.

Note: Because ESG risks materialize at an unknown time in the future and depend on a variety of unpredictable conditions, no predictions on financial or share price impacts, or on the time horizon of such impacts, are intended or implied by these risk categories.

ESG Risk Ratings Score (Overall Unmanaged Risk Score, ESG Risk Ratings)

The company's overall score in the ESG Risk Ratings; it applies the concept of risk decomposition to derive the level of unmanaged risk for a company, which is assigned to one of five risk categories. The score ranges from 0 and 100, with 0 indicating that risks have been fully managed (no unmanaged ESG risks) and 100 indicating the highest level of unmanaged risk. It is calculated as the difference between a company's overall exposure score and its overall managed risk score, or alternatively by adding the Corporate Governance unmanaged risk score to the sum of the company's issue unmanaged risk scores.

Event Indicator Category (Event Category)

Sustainalytics categorizes events that have resulted in negative ESG impacts into five event categories: Category 1 (low impact); Category 2 (moderate impact); Category 3 (significant impact); Category 4 (high impact); and Category 5 (severe impact).

Event Indicator	An indicator that provides a signal about a potential failure of management through involvement in controversies. An event indicator for a material ESG issue has an increased weight within the issue management score as the event category rises (see events logic). If it relates to an ESG issue that was not previously selected as material for a company, the issue becomes material if there is a category 4 or 5 event (see idiosyncratic issues).
Exposure Dimension (Exposure)	One of the two dimensions of the ESG Risk Ratings, this dimension reflects the extent to which a company is exposed to material ESG risks. Exposure can be considered as a sensitivity or vulnerability to ESG risks.
Exposure Score (Exposure)	A score between 0 and 100 to assess the Exposure Dimension of the ESG Risk Ratings.
Idiosyncratic Issue	An idiosyncratic issue is an issue that was not deemed material at the subindustry level during the consultation process but becomes a material ESG issue for a company based on the occurrence of a Category 4 or 5 event. Idiosyncratic issues are represented only by the respective event indicator and receive an exposure score according to a specific predetermined scheme.
Issue Beta (Beta, β)	A factor that assesses the degree to which a company's exposure deviates from its subindustry's exposure on a material ESG issue. It is used to derive a company-specific issue exposure score for a material ESG issue. It ranges from 0 to 10, with 0 indicating no exposure, 1 indicating the subindustry average (as represented by the subindustry exposure score), and 2 indicating exposure that is twice the subindustry average. Betas above 2 are extreme cases and very rare.
Manageable Risk	Material ESG risk that can be influenced and managed through suitable policies, programmes and initiatives. Note that fully manageable does not mean that Sustainalytics believes there are no challenges or difficulties to managing the issue – rather, fully manageable indicates that there are no evident physical or structural barriers that make it impossible to fully manage the issue. Furthermore, fully managed does not mean that there is never a problem; rather, it means that a problem can be dealt with proactively to avoid material risks.
Managed Risk	Material ESG Risk that has been managed by a company through suitable policies, programmes or initiatives.
Issue Management Gap Score (Issue Management Gap, Management Gap)	Refers to the amount of manageable risk that the company could address through policies and programmes, but which is has not yet managed. It is calculated by subtracting the issue managed risk score from the issue manageable risk score. The score ranges from 0 to a company's issue manageable risk score (maximum of 20), with 0 indicating that all of a company's manageable risk pertaining to a material ESG issue has been managed, and a score equalling a company's issue manageable risk score indicating that none of the company's manageable risk pertaining to a material ESG issue has been managed. issue management gap score = issue manageable risk score – issue managed risk score
Management Dimension (Management)	One of the two dimensions of the ESG Risk Ratings, this dimension measures a company's handling of material ESG issues through policies, programmes, quantitative performance and involvement in controversies, as well as its management of Corporate Governance.

Management Indicator	An indicator that provides a signal about a company's management of an ESG issue through policies, programmes or quantitative performance, for example. Management indicator raw scores range from 0 to 100, with 0 indicating no (evidence of) management of the issue and 100 indicating very strong management.
Material ESG Issues	A core building block of the ESG Risk Ratings. An ESG issue is considered to be material within the rating if it is likely to have a significant effect on the enterprise value of a typical company within a given subindustry and its presence or absence in financial reporting is likely to influence the decisions made by a reasonable investor. Material ESG issues were determined at a subindustry level in the consultation process but can be disabled for a company if the issue is not relevant to the company's business. A disabled material ESG issue has a weight of 0. Note that no specific predictions about financial impacts at the company level are implied by the presence or absence of an issue as a material ESG issue.
Unmanageable Risk	Material ESG Risk inherent from the intrinsic nature of the products or services of a company and/or the nature of a company's business, which cannot be managed by the company if the company continues to offer the same type of products or services and remains in the same line of business. For example, a coal company cannot fully manage the carbon emission risks of coal without exiting the coal business, as coal will continue to emit carbon when burned, regardless of a company's management initiatives. The only option to fully manage this risk would be to diversify out of the coal business. This risk cannot be meaningfully modelled by assessment of management indicators and is therefore regarded as unmanageable.
Unmanaged Risk	Material ESG Risk that has not been managed by a company, and includes two types of risk: unmanageable risk, which cannot be addressed by company initiatives, as well as the management gap, which represents risks that could be managed by a company through suitable initiatives, but which may not yet be managed.

Endnotes

[1] The authors wish to thank their Sustainalytics colleagues Alison Gray, Victor Ursulescu, Matt Barg, Juliette Goulet, Clark Barr, Claudia Volk and Dr. Hendrik Garz for their assistance in preparing this report.

[2] Market cap data sourced from Bloomberg, as of 1 October 2018.

[3] As we explained in *Moving up the Innovation Curve: White Paper – Volume 1*, ESG Risk Exposure reflects the degree to which a company (or subindustry) is exposed to material ESG issues. Exposure can be considered as a set of ESG-related risk factors that pose potential financial risks for companies. Negligible exposure suggests that the issue is of little material importance to a company or subindustry; higher exposure suggests that the issue is material.

[4] The technical definition is as follows: the average exposure of all companies within a subindustry calculated as the weighted sum of companies' individual exposure using either a market cap or equal weight methodology, depending on the subindustry.

[5] This figure includes half of the companies in the 50-60 bucket (14%/2=7%), all of the companies in the 60-70 bucket (7%) and all of the companies in the 70-80 bucket (4%).

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18 ESG Risk Rating scores were used to break ties in exposure scores.

19 ESG Risk Rating scores were used to break ties in exposure scores.

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21 ESG Risk Rating scores were used to break ties in exposure scores.

22 Op cit., Garz, H. and Volk, C. (2018), p. 23.

23 Management comprises an assessment of a company's ability and success in managing its material ESG and Corporate Governance issues. Our management assessment is based on two subsets of indicators. The first one relates to a company's preparedness to manage these issues via appropriate institutional structures, policies and programmes (preparedness indicators). The second one measures the company's success in implementing its management systems, as reflected in quantitative outcomes (e.g. actual emissions reductions) and its involvement in events.

24 The management gap is calculated as unmanaged risk minus unmanageable risk. For a complete discussion, see Garz. H and Volk, C. (2018), p 35.

25 Average subindustry unmanaged risk score = 24. Average subindustry exposure score = 37. Average proportion of exposure that is unmanaged = ((24/37)*100% = 65%.

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32 We are in process of gathering data to calculate a beta component that will reflect differences in how and what companies in the ISS subindustry produce.

33 For further details, see Garz, H. and Volk, C. (2018), p. 23.

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