Practices of Corporate Social Responsibility Reporting for Semiconductor and Chip Manufacturing Industry – A Multicriterial Analysis on INTEL and AMD

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Abstract

The current research paper contains the multicriterial analysis of the Corporate Social Responsibility Reports in the semiconductor and chip manufacturing industry for Intel Corp. and AMD Inc. In the interest of a fair analysis, we chose a multicriterial analysis with a structure consisting of data points found in the CSR reports of both companies. The first part of our paper servers an introductory purpose, in which we described the reasoning behind choosing CSR reporting as a theme for our research paper as well as why we chose Intel and AMD as a case study. Furthermore, we have a brief description of the two companies, with similarities and key differences for any readers that are not familiar with the business affairs of Intel and AMD. Subsequently, we have the literature review, and the research methodology with the multicriterial analysis for the CSR reporting at Intel and AMD, and their financial performance. We displayed the same indicators for both companies, focusing on the quantifiable data, as well as the clarity and displaying of the information within the report. Finally, we presented a summary of our findings concerning the financial commitments and the way information was displayed within the reports, as well as establishing future research opportunities.

Key words: CSR Reporting, practices, multicriterial analysis, AMD, Intel
J.E.L. classification: G34, M42

1. Introduction

Our paper aims to present CSR reporting practices for a specific industry, through a multicriteria analysis of the two main competitors. Due to the recent year's development, there has been an unshifting tide of ever-rising stakeholder interest not only towards the value of a product that a company offers but also putting a big emphasis on the social and environmental value that the company creates outside its products. It also helps the stakeholders know the organization's short, medium, and long-term strategies and goals. This type of reporting has been gaining more and more popularity and it has become the mainstream benchmark for assessing investment opportunities.

In this paper, we chose to present CSR reporting practices, for a specific industry, semiconductor chip manufacturing, and design, in a comparative analysis between the two main competitors, tech giants in semiconductor chip manufacturing and design, Intel Corp. and Advanced Micro Devices inc. (AMD).

There are two main reasons for our choice, the first reason is the global impact of the advancements made by those two companies. As the price of crude oil has a global impact and can drive the world's economy up or down, so do the advancements in computing power as it is obvious for the last year with the semi-conductor crisis. Whether we know it or not technology in the modern-day touches every branch of our lives, from social interaction, health and wellness, education,

military, entertainment, and many others, all are changed and driven forward by the increase in computing power. And the greatest thing about this is that technology boosts itself. The increase in computing power and advances in technology drive innovation in the same field at an increased rate for every generation (Good I.J., 1965).

The second reason speaks about economic performance, as they represent two of the best investment opportunities of the last decade. On the short-term review of the Intel and AMD stock, the market seems to be very volatile. But taking a broader view of a few years, we can see a continuous increase in the stock price of both companies. By reviewing the CSR report for them we can have a better understanding of what actions those two companies have taken to add to the value of the company besides the products themselves.

2. Literature review

The decision of voluntary disclosure of data is a critical assessment undertaken by entities; this action provides an all-embracing understanding of why organizations choose to disclose information, ensuing reporting after incidents, and about situations where the organization's actions and disclosures are incongruous.

Several authors argue that organizations engage in CSR reporting mainly due to external pressures and legitimacy reasons (De Villiers C., Maroun W., 2018). They consider that the definition provided in 1995 (Suchman, 1995, p 574) is the cornerstone for constructing the argument: "*Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definition.*"

We realize that the extent of reporting plays a crucial role. On one hand, if the entities increase the extent of reporting it might lead to difficulties when repairing legitimacy after incidents, on the other hand, a decrease in the extent of reporting, is essential for downplaying adverse events, avoiding criticism, and denying responsibility (De Villiers C., Maroun W., 2018). Different academics discussed the cornerstone role of disclosure in terms of climate change and on a border range of environmental issues, (Ben-Amar and McIlkenny, 2014), but also in terms of increased transparency and liability i.g. BP oil spill - damaging actions (Gray and Milne, 2015), and business scandals such as child labour (Cheng et al., 2016).

It is in an organization's best interest to establish itself as a legitimate part of the society in which it operates or to maintain its legitimacy to ensure support from important stakeholders. Starting with the legitimacy theory, the need to strengthen the link between the stakeholder's necessity for information and of the entity's corporate social responsibility (CSR) performance is obvious, therefore some authors claim that entities cannot afford to be socially irresponsible (Lund-Thomsen et al., 2016) and alongside that, various authors argue that the communication of such information and the commitment involved towards the society increase the company's reputation (Perez, 2015).

Within the relevant literature review, we can consciously identify several research trends based on a multicriterial analysis of chronological delineations and the stakeholders' interests. Early on, the analysis focused on the role of annual reports as the main vector of disclosure for CSR (Idowu and Towler, 2004; Nobanee and Ellili, 2015). We identified another group of researchers that studied intensively the connection between CSR and the entity's reputation (Hogan and Lodhia, 2011; Cho et al., 2012). The third research trend identified is centred on CSR relationship to environmental and economic performance (Perrini and Tencati, 2006; Dragomir, 2010; Vurro and Perrini, 2011; Qiu et al., 2016;).

In recent years, we have witnessed the introduction of CSR reporting in the tech industry, one of the most prominent examples concerns supply chain responsibility. The reasons for these introductions are various and may refer to the genuine adoption of corporate values or quasi-adoption. However, the true benefit of CSR reporting being adopted across the industry is that it inherently leads to more reforms regarding supply chain responsibility.

3. Research methodology

The CSR reports for the two companies can be found online on their website, free to download for any interested party. This approach offers great transparency and ease of obtaining information regarding their CSR activities. In the same manner, we have obtained the yearly financial statements that go into detail about all the financial aspects of the company for the previous years.

A brief overview analysis of the two companies includes a chronological analysis of their evolution and their production. Intel Corporation has been established on 1968, July 18th, by early onsetters in terms of semiconductors, Robert Noyce and Gordon Moore (of Moore's law) and is associated with Andrew Grove, recognized for his tremendous leadership and executive vision.

Advanced Micro Devices was officially incorporated in 1969 on the first of May by Jerry Sanders with several of his peers from the American semiconductor company, Fairchild Semiconductor.

Even though both companies have almost the same product portfolio until 2016 Intel dominated the market in almost all segments reaching an overall peak of 82.5% of that market. That started to change with the launch of the ZEN architecture and Ryzen series in December 2016, but even to this day, intel has a market share of 61.4% overall, 63.7% of the desktop CPU market, and over 82% (preliminary results for 2020) on the server-grade enterprise market. For the year 2019 Intel had a revenue of 72B $ whilst AMD revenue was 7.33B $.

We have identified two key differences that make Intel more successful financially. Firstly, ***better control over its manufacturing and a larger manufacturing capacity***. Intel has its own manufacturing plants, its own silicon foundries, and that gives Intel a competitive edge in manufacturing efficiency and better product quality control. AMD processors are designed but not made by them, both GPU and CPU products designed by AMD are made by Taiwan Semiconductor Manufacturing Company (TSMC) and GlobalFoundries (GF), and also have a strategic partnership with Samsung. This manufacturing difference provides Intel with a greater profit margin for its products. Also, because TSMC makes semiconductor chips for many companies, this has led to an availability shortage for AMD products in 2020 and Q1 of 2021.

Secondly ***Intel architecture and developers.*** Intel architecture has better support and more integrated technologies than AMD and it gives them an untouchable performance edge in some applications. Intel has over 15000 software developers on its payroll to help fix and improve software code to make applications run better for their products.

The ***recent developments favour AMD***, which has made great progress in the server and desktop market in recent years. Their new CPU server line called EPYC offers greater performance than Intel's server-grade CPUs (Xeon) at a better price point. An Intel Xeon server-grade chip costs from 8700$ to 10000$ whilst the AMD EPYC counterpart is only 4000$ and in most cases offer better performance. In the desktop market, AMD has taken a similar approach focusing on the value aspects of the product and lower power consumption. Having more energy-efficient chips means they can add more cores and reduce heat and overall power expenses. This in combination with a lower price than the competition, makes AMD the leader in performance per dollar metric which has made their new products very desirable. This new strategy has saved AMD from bankruptcy and has given them in recent years, a growth in revenue and stock value much greater than Intel's.

The second scope to our multicriterial analysis is: ***describing the strategies and goals both companies had for the previous period regarding CSR, and the results they achieved.*** The CSR reports for both companies were released in the first half of 2020. As the Covid-19 pandemic was in full effect, both companies' reports started with a letter from the CEO and their ongoing efforts to combat the pandemic on a company level and on a global scale.

Briefly, the Intel response to the COVID-19 pandemic aimed to protect the health of their employees and service partners through an increased financial expense that surpassed 100 million USD. They launched a 50 million $ program to increase access to technology at the patient care level, accelerate scientific research, and secure accessibility to education for students. Another way Intel chose to fight this pandemic was to join a global coalition focused on finding solutions for COVID-19 as well as future pandemics. By co-founding the Open COVID Pledge, Intel provided access to their intellectual property to researchers and scientists. Intel, the Intel Foundation, as well as its subsidiaries donated more than 10 million $ to aid local communities. In addition, Intel donated 1 million pieces of protective equipment—masks, gloves, and other pieces of protective gear—to

support workers in the healthcare system. Meanwhile, AMD provided financial support for medical services and humanitarian relief, donating personal protection equipment to medical professionals, and prioritizing and expediting product shipments to medical customers like the AMD embedded processors used in ventilators and respirators, and they contributed with 15 million dollars worth of high-performance computing technology and expertise to accelerate medical research that will enable some of the world's brightest minds to develop therapies and possible vaccines for COVID-19.

Both companies have been increasing their efforts to help combat the ***Covid-19 pandemic*** in the flowing mouths of 2020, but because we are referring to the CSR report of the previous period, analysing the data from the report we can observe the following: (1) Intel's response was on a bigger scale and their actions are described in more detail. Intel reacted faster to this crisis because it is not the first time, they have encountered such a situation. Intel has experience of over 15 years, ever since the SARS and H1N1 virus. They created a Pandemic Leadership Team with pre-emptive measures and strategies to better overcome future global health crises. This has proven to be a great asset in their company and the rapid response is a direct result of that.

The financial commitment to combat Covid-19. To talk about the invested amounts in combating the pandemic we also have to take into account the company's financial power. As a financial indicator, we will be referring to the 2019 Net Income for both companies. The results are the following:

- Intel invested 60M $ out of a 21B $ Net Income for the year 2019. That amount represents 0.285% of the Net Income for 2019.
- AMD invested 15M $ out of 341M $ Net Income for the year 2019. That amount represents 4.398% of the Net Income for 2019.

AMD has made a greater investment in reference to their Net Income for the year 2019.

4. Findings

Going further with the analysis of the indicators found in the latest report, we will be focusing on the following points of interest concerning CSR: (1) Environmental sustainability, (2) Supply chain responsibility, (3) Diversity and inclusion, (4) Improving the world through technology

4.1. The Environmental sustainability

From the reports analysed, it can be proved that Intel and AMD recognized early that being environmentally conscious brings added value to the company and that potential investors pay great attention to environmental stewardship.

4.1.1. Water usage, waste, and effluents can prove a great environmental threat. Both companies have been undergoing great efforts to decrease water usage, water pollution and to increase water recycling.

Intel's water strategy envelopes three prime objectives: reduce water used in their operations, support the water initiative of local communities, and come up with new technologies that change the way we use and conserve water. Since 1998, the amount allocated to water conservation projects amounts to more than 265 million USD. Intel currently treats and returns roughly 75 to 85 percent of their total water withdrawals, the remainder 15 to 25 percent being consumed through their operations (mostly through landscape irrigation and evaporation). For their 2010-2020 goal, their want to reduce water use on a per-unit basis and work towards their goal to restore 100% of their total water use by 2025.

AMD water strategy has three main objectives: reduce water usage, reduce waste, and effluents. In 2019, water use in their own operations decreased by 9% since 2018 and by 10% since 2014. Their data center cooling requirements, as well as related irrigation at their sites, amount to the majority of the water used. AMD sites collect rainwater and reuse greywater at facilities in Austin, Texas, Bengaluru, and Hyderabad, India. Their non-hazardous waste diversion rate, or the amount kept out of the landfill, was 62% in 2019, compared to 65% in 2018. The amount of regulated hazardous waste generated increased from 2.5 metric tons in 2018 to 10 metric tons in 2019 due to a reclassification of e-waste in California. Across all their value chain, the highest use of water and generation of effluents occurs at the contracted wafer manufacturing stage. AMD works closely with

its foundry wafer partners to track and manage water usage. This includes a public goal to maintain water use to 40% below the industry average based on the manufacturing index. In 2019, these foundries were 48% below the industry average.

As one can notice from the above description for water conservation efforts from both companies, there are some differences in goals and results obtained, those being the following: (a) Intel has revealed their efforts regarding water stewardship for a timeline of 10 years (2010-2019), whilst AMD's timeline only covers 6 years (2014-2019); (b) Intel has revealed financial commitments regarding their water strategy, 267M $ since 1998, whilst we do not have any financial information regarding this subject from AMD. (c) Intel provided a greater description of the amounts of water saved, either through lowering consumption or increasing recycling. Such figures have not been provided in the AMD CSR report. We have to take into account that Intel also has its own silicon foundries, and therefore has greater control over the production and can also measure its results accurately and with greater ease. AMD outsources production to other manufacturing foundries and even though AMD can request certain efficiency requirements for their product manufacturing they do not have the same level of control Intel has.

4.1.2. Electricity usage (manufacturing and product energy efficiency)

Electricity is a key resource used in the semiconductor industry. It cannot operate without it, and it has no substitute. Both companies recognize that reducing electricity usage by increasing efficiency in their operations and the final product is a key component in being environmentally conscious. In the following part, we will be reviewing the energy usage strategies and goals of the two companies.

Intel's 2019 total energy consumption increased by 15% since their reference period of 2018, due to worldwide growth in their manufacturing, whilst for 2019, the normalized energy consumption decreased by 8% since the 2018 reference period, suggesting that the energy required to produce one unit of product is lower, indicating an increase in energy consumption efficiency. Additionally, to further aid their energy conservation efforts, Intel invested in on-site alternative energy production aimed to facilitate power directly to their buildings.

AMD envisions a world where technology minimizes environmental impacts while advancing economic growth. They recognize the need to significantly reduce the energy consumption that results from producing and using technology. They are steadfast in their commitments to environmental stewardship—whether it's by sourcing renewable energy for their offices, demonstrating best-in-class manufacturing with wafer suppliers, or efficiently powering millions of AMD-enabled devices in 2020. In 2019, their foundry partners significantly outperformed industry averages for electricity use by 21%, based on the manufacturing index.

Product efficiency was their biggest focus. AMD exceeded their moon-shot 25x20 energy efficiency goal to improve the energy efficiency of their processors for mobile products 25 times from 2014 to 2020. The new 3rd generation AMD Ryzen Mobile processor (model 4800H) has achieved a 31.7-times improvement from the 2014 baseline metric, providing exemplary performance and efficiency. As a result, the new Ryzen processor consumes 80 percent less power and can accomplish a task in 84 percent less time compared to the equivalent AMD mobile processor from 2014. A company that would upgrade 5,000 laptops from 2014 that use AMD chips to the 2020 model will have five times more computing power, while reducing energy consumption on an average of 140,000 kilowatt-hours during a product life of three years, mitigating 100,000 kilograms of carbon emissions, which is the equivalent of 1,600 trees matured over the span of a decade.

From the previous depiction of the energy efficiency goals and strategy we notice the following: (a) Both companies have achieved their goal regarding decreasing energy consumption and even surpassed them. A key difference here is in the detailing and data provided by the two companies. Intel provided an overall more detailed description of their energy-saving goals, strategies, and the results obtained. (b) Regarding product efficiency, both companies have made great efforts towards meeting their goals, but only AMD was able to accomplish it. This target was met because product efficiency was the number one priority for AMD in designing their new generation chips, and it is what saved them from bankruptcy. The data provided by AMD also illustrates how this new approach brings a tremendous benefit not only to customers but to the environment.

4.1.3. GHG emissions. Reducing greenhouse gas emissions is a key factor in slowing down global climate change, and at the same time reducing air pollution.

For more than 20 years, Intel's approach regarding GHG emissions had the goal to reduce energy consumption and decrease air pollution. Since the reference year of 2000, Scope 1 and Scope 2 emissions have declined by an average of 31 percent on an absolute basis, even when considering the expansion to their manufacturing facilities. For the 2020 period, Intel has set the target of decreasing GHG emissions by a tenth of the 2010 levels on a per unit metric. By the end of 2019, they surpassed their target by 290%.

AMD recognizes that the reduction in GHG emissions is a key weapon against climate change. Their goal for 2020 for reducing GHG emissions by 20% was met in 2019 with a 23% reduction from the 2014 goal baseline and an 11% improvement from 2018. AMD provides precise data for GHG reductions over their facilities, but the strategies used to achieve the results are spread over multiple subchapters.

From the analysis of the report, we can observe that both companies are undergoing efforts to reduce GHG emissions across all their company chain. The difference here arises from the display of the GHG reduction strategies in the report. Intel report provides the data in a more easily accessible format having all the data in one subchapter, while AMD report has the strategies for GHG emissions reductions spread over multiple subchapters. Even though this reporting method has been used extensively for this indicator, it can be noticed for multiple other indicators as well.

4.2. Supply chain responsibility

Supply chain responsibility is a key component in CSR and it shows how a company is advancing accountability and improving performance across all the supply chain whilst creating value for the company and reducing risk for the customer.

Intel's approach to this indicator has three main focus points: obtaining minerals from responsible sourcing, increasing supplier engagement in CSR, and preventing forced and bonded labour in their supplier chain. They provide detailed information about their goal and results for their suppliers for every region, this includes the Americas, Europe, Middle East, Africa, and Asia-Pacific. Their approach in obtaining minerals only from responsible sources has been very successful. From an evaluation of 215 companies, the highest score was achieved by Intel, the singular company with a superior rating for conflict minerals due diligence in the Responsible Sourcing Network's 2019 Mining and Disclosure guide. They also have the same water, energy, and recycling protocols for all their suppliers. They all have to meet Intel's standards regarding eco-friendly policies. Roughly 400 suppliers, constituting over three-quarters of the supply chain expanses in 2019, are required to comply with their dynamic program aimed to boost supplier performance through diligent efforts concerning complaisance, transparency, and capability building.

Intel has a zero-tolerance policy for forced and bonded labour, their current evaluation and efforts extend their grasp in the supply chain, which has reached over 38,000 workers. To ward off forced and bonded labour Intel expects all its suppliers to comply with the principles of equality of opportunity. As a result, they have emended over 15M USD in payments to supplier workers and have discovered another 10M USD to be remitted in 2020.

AMD incorporates corporate responsibility expectations into the same business processes they use for all supplier performance – the supplier business reviews (SBRs). The SBR is the forum where senior leaders from both companies come together regularly to discuss a broad range of topics relevant to their business relationship. Corporate responsibility is an integral part of these relationships and is thus included in the SBR for manufacturing suppliers. AMD is a full- member of the Responsible Business Association (RBA). They have adopted the standards within the RBA Code of Conduct and expect their suppliers to conform to them. AMD also has measures to ensure that no counterfeit semiconductors are used at any point in the supply chain. To safeguard product integrity AMD has established an extensive set of controls to ensure parts are securely manufactured, assembled, tested, uniquely tracked, marked, stored, and transported from manufacture to authorized distribution.

From the reviewing of both disclosures concerning supply chain responsibility, we can notice that the two companies have been implementing various strategies to ensure that their supplies are conducting their business by following CSR guidelines. They provided detailed descriptions of their goals and strategies, but only Intel provided precisely measured data regarding this subject.

4.3. Diversity and inclusion

Diversity and inclusion are, to a greater extent, something additional to policies, programs, or headcounts. Impartial organizations outperform their competitors by acknowledging the distinctive requirements, perceptions, and abilities of all their employees. As a consequence, diverse and inclusive offices gain greater confidence and additional dedication from their employees and their clients.

Intel considers diversity and inclusion as fundamental beliefs and subservient in driving innovation and providing greater business development. They have achieved their goal, providing equal average pay for their employees, regardless of gender. In 2020 they achieved their goal of spending 1B USD per annum with diverse-owned suppliers, spending over 200M USD on women-owned suppliers worldwide. They have been granted more than 20 third-party acknowledgements for their diversity and inclusion efforts in 2019, and the first half of 2020, including a spot on the Bloomberg Gender-Equality Index. Starting with the reference year of 2002, the Human Rights Campaign has listed Intel on its Corporate Equality Index and has awarded the company the top score of 100 for 15 of those years.

AMD describes diversity and inclusion as a very important aspect of its corporate culture. According to internal survey results, 85% of respondents agree with the statement "I am proud of my company's involvement in the community and social causes." AMD had affinity groups for years-most notably the AMD Women's forum – they introduced a corporate ERG policy in 2016 to clarify the process and encourage the formation of other groups. Unfortunately, AMD does not provide any quantifiable data regarding this subject.

From the examination of the two reports, we can notice that, although both companies have been involved with having a more inclusive and diverse workplace, AMD's report provides a very vague description of their strategies and included no measurable results. Intel's report provides a detailed description of their goals, strategies and provided measurable results across all their efforts regarding this subject.

4.4. Improving the world through technology

We live in a time where technology can improve our lives unlike ever before. From healthcare to travelling or even farming, technology aids us every day, seamlessly and sometimes without even knowing. Intel states that it is committed to creating a better world through the power of its technology and the passion of its employees.

In 2020 Intel celebrates the twenty-fifth anniversary of Intel Involved, Intel's global corporate volunteer program. Since the program's launch in 1995, Intel employees and retirees clocked in more than 17M hours of community service, 1.2M hours recorded in 2019 alone.

Intel announced grants of 1.25M $ in the US to encourage middle school-girls interest in technology, engineering, and computer science through the Intel She Will Connect initiative. Intel is also empowering communities through four other programs: (1) Intel Future Skills, (2) Computer Science for JROTC Cadets, (3) Intel She Will Connect, (4) Intel AI for Youth. Until the spring of 2020 when COVID-19 impacted the health and safety of the world, AMD has typically hosted their annual AMD Cares Day of Service with the goal of getting the employees out into their local communities for a company-wide celebration of community service. Since the program launched in 2015, over 9,000 employees worldwide have volunteered more than 15,000 hours.

AMD is focused on instinctive and immersive computing and how that technology can unleash the power of machine learning and other high-performance computing applications to tackle important global challenges including the following: (1) Medical diagnostics already rely heavily on various forms of imaging. (2) Education is ripe for innovation through immersive and instinctive technologies. (3) Scientific research is entering an era of tremendous potential due to new compute

capabilities. (4) Security concerns are an inevitable part of 21st-century life, and AMD works with others in the industry to prevent and address vulnerabilities.

4.5. Comparative analysis of the financial performance of both companies during the last 4 years (2016-2019).

In the next part we will be analysing the financial performance of the two companies through the following indicators: Revenue, Net Income, Stock Price, Change in Stock Price (percentage), Worldwide Charitable Giving for the 4 years of 2016-2019.

The first indicator that we will be looking at is Revenue, and we can notice from the data that Revenue has recorded the following changes (1) Since the reference period of 2016 Intel has recorded an increase of 12.6B USD, or in relative units 21.21%, in 2019. (2) Since the reference period of 2016 AMD has recorded an increase of 3B USD, or in relative units 69.76%, in 2019.

From the revenue data, we can notice that Intel has a Revenue far greater than AMD's. This is due to the wide array of products and technologies they provide, far more than AMD, and still having a dominance on the CPU market share, 68,4% versus 31.5% for AMD in Q4 2019.

When it comes to the growth rate for the Revenue, we can notice that AMD had a growth rate more than 3 times larger than Intel's, 69.76% versus 21.21% for Intel. This is due to the launch of the new ZEN architecture that brought great interest from consumers for the performance and value of the product

The next indicator analysed is Net Income. We observe that Net Income has recorded the following changes: (1) Since the reference period of 2016 Intel has recorded an increase of 10.7M USD, or in relative units 103.88%, in 2019. (2) Since the reference period of 2016 AMD has recorded an increase of 839M USD, or in relative units 168.47%, in 2019. So, we can notice that Intel doubled the value of their Net Income from the reference period, and AMD has achieved a positive Net Income. To give a more meaningful analysis of the Net Income values we will take a look at the Profit Margin:

Table no. 1 Profit Margin for Intel and AMD 2016-2019

Profit Margin %	2016	2017	2018	2019
Intel	17,34%	15,28%	29,80%	29,16%
AMD	-11,58%	-0,63%	5,26%	4,67%

Source: Computed data from CSR reports from Intel and AMD

From the data, we can notice that Intel has 6 times more Profit Margin than AMD. This is in part due to Intel having their own foundries, thus benefiting from the profit margin related to production, while AMD is outsourcing the production and losing that profit margin in favour of TSMC.

Another performance indicator that investors are interested in is Stock Price, reflecting the investors' perception of the company's ability to earn and grow its profit in future years. From the data provided for the last four years, we can notice that both companies have recorded a growth in stock price, with Intel more than doubling its stock price, while AMD from the brink of bankruptcy achieved a stock price that is three quarters the value of Intel's. This was a huge leap and a very good investment opportunity, and this is all due to the new ZEN architecture.

The last indicator that we will be looking at is one rather important in regard to evaluating a company's CSR performance, Worldwide Charitable Giving. This indicator contains the amounts of cash donated or invested in non-profit activities. The values recorded for the two companies are the following:

Table no. 2 Worldwide Charitable Giving 2016-2019

Worldwide Charitable giving in million $	2016	2017	2018	2019
Intel	112,70	89,60	84,20	75,10
AMD	0,17	0,21	0,27	0,45

Source: CSR reports from Intel and AMD

From this data, we can conclude that Intel gives in absolute values far more money than AMD, but when considering the Profit Margin, both companies have respectable amounts regarding charitable givings.

5. Conclusions

Corporate social responsibility reports aim to enable companies to properly determine the impact of their activities on the environment and on society. Although the two companies have different sizes and financial power, they both have committed substantial financial resources when it comes to being a steward of the environment and society, as well as preserving corporate ethics in their business activities and their supply chain. When considering the net income for 2019 for both companies, we can notice that Intel spent 3 times more than AMD when it comes to Worldwide Charitable Giving.

When it comes to the results of their CSR strategies and goals another trend emerges. We can notice that Intel has provided more quantifiable data when it comes to all the four points of interest studied in this paper (Environmental sustainability, Supply chain responsibility, diversity, and inclusion, Improving the world through technology). This shows that Intel is collecting more data, and precisely measuring their performance in their own facilities as well as in their supply chain. Equally important as the data itself, is how you display it. When it comes to the structure of the two reports two key differences emerge.

The first noticeable difference is in the flow of information following a well-determined structure. In Intel's case, the data in the report is presented in well-defined chapters, each with the purpose of following the goal, strategy, and measurable result formula. In AMD's case, the data regarding the same goal is scattered in multiple chapters over the entire report. This is most noticeable when analysing the environmental indicators. This method of scattering the information, and repeating it in a different format could indicate the lack of data provided in the report.

The second noticeable difference is in the clarity of the information regarding their strategies, and programs. In both cases, the two companies provide additional information when it comes to their strategies and programs via hyperlinks that send the reader to the appropriate site, that further details the subject. When it comes to using the data available in the written format of the report, Intel provides sufficient information to understand the strategies used and the activities of the subsequent programs, the provided links only offer further information for interested readers. In AMD's report, certain strategies and their regarding programs do not provide ample information for the reader who is not already familiarised with them. In some cases, you must follow the provided links to properly assess the doings of a certain program. This approach is not very friendly to the average reader, who is interested in getting the proverbial lay of the land when it comes to understanding their business.

After reviewing the financial information provided in the report, we can notice that both companies provided relevant data, and more than sufficient for a CSR report, for the purpose of evaluating their economic development. For further information, the two companies have financial reports available online as well, that provide the entire ensemble of financial performance indicators.

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