A Work Project, presented as part of the requirements for the Award of a Master Degree in

International Management from the NOVA – School of Business and Economics.

FAIRPHONE

A SOCIAL ENTERPRISE ON ITS CHALLENGING WAY TO EXPAND BEYOND THE NICHE MARKET

AND MAKE FAIRER SMARTPHONES AN ATTRACTIVE ALTERNATIVE FOR MASS CONSUMERS

Case Study and Teaching Note

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A Project carried out in the International Master in Management Program,

under the supervision of:

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02.01.2020

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ABSTRACT

The purpose of this work project is to give students insights into a pioneering social enterprise in the consumer electronics industry, a sector that is often associated with negative social and environmental impacts and involves very complex supply chains which make the establishment of sustainability measures in lower tiers difficult. This work aims to describe and analyse Fairphone's history, its approach towards increasing its phones' "fairness", and tensions that the company has encountered in the course of its growth-process. Through a case study format, students also learn about sustainability issues in the consumer electronics industry and related political reactions, and about Fairphone's competitors and their sustainability approaches.

KEYWORDS

Fairphone, Social Enterprise, Sustainable Consumer Electronics

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1. Introduction

Fairphone, a social enterprise that started as an awareness campaign about conflict minerals in consumer electronics, ended up being the first smartphone company with the mission to launch a modular, fair produced phone and to create a shift in the electronics industry. But transitioning a social start-up to scaleup is not easy: *"One of the unifying themes of 2017 was growth. This applied to the company as a whole, but especially to our goals for increasing sales and reaching new markets. While moving closer to profitability was certainly one of the motivators, at a higher level, our sales goals were directly tied to proving that the Fairphone 2 is a viable choice for mainstream consumers, increasing demand for ethical products, and expanding our impact"* (Fairphone, 2018, 27). Now, more than two years later and with many new achievements, the social business is still in the middle of the bumpy road towards exiting the niche market and making the Fairphone a feasible option for mainstream buyers – and needs to handle and solve certain tensions in order to get there. These tensions, along with important background information about Fairphone and its (business) environment, are illustrated in the following case study, giving students the opportunity to gain insights into social enterprises and the struggles of scaling-up their business.

2. Why the urgency of making consumer electronics more sustainable?

Consumer awareness regarding sustainability issues – both social and environmental – has drastically increased during the last decade. In reaction to customers' demands for more sustainable products, industries such as the food (Murray, 2019) and textiles industry (Cooper, 2019) are shifting towards implementing more environmentally and socially friendly practices. But when it comes to consumer electronics with long, complex supply chains such as smartphones, only a few consumers are aware of the social and environmental implications of their devices'

production (Bodenheimer, 2018). However, campaigns by non-governmental organizations (NGOs) and journalists, as well as the availability of more sustainable product alternatives like the Fairphone (Greenpeace, 2017c and Bodenheimer, 2018), have led to an increase in public awareness about these issues in recent years. Slowly, policy makers are also reacting to public outcries through the implementation of stricter regulations for the consumer electronics sector.

2.1. Negative social and environmental impacts of consumer electronics

Starting with the release of Apple's first iPhone in 2007, smartphone sales have experienced a rapid growth. While the global number of smartphones sold to end users totaled 122 million in 2007, it climbed to over 1.5 billion in 2018 (Holst, 2019b). In the next years, smartphone penetration is predicted to continue to rise: At the end of 2018, smartphone subscriptions amounted to 5.1 billion and this number is forecasted to reach 7.2 billion by 2024 (Ericsson, 2019).

However, the above-described continuous growth of the smartphones industry comes at high social and environmental costs: Minerals used for manufacturing phones and other advanced electric devices like gold and cobalt are usually extracted from small-scale mines without any security and health protection measures. Laborers – including children – work under life-threatening circumstances due to risks of explosions, rock falls, and tunnel collapse and they breathe air full of dust and at times toxic gases (ILO, 2016 and ILO, 2006). Additionally, of the more than 60 elements contained in a smartphone, gold, tin, tungsten, and tantalum are defined as "conflict minerals" by US legislation as their extraction represents an essential source for financing armed conflict in the Democratic Republic of the Congo (DRC) (U.S. Commodity Futures Trading Commission, 2010). Further down the supply chain, workers in electronics factories mostly located in Asia are often exposed to hazardous chemicals that pose risks to their health (Greenpeace, 2017) and face poor working conditions that include excessive overtime, forced labor, low wages and a lack of worker representation (DanWatch, 2013).

Another source for social and environmental issues caused by the mobile phone industry is e-waste. Since technologies advance quickly, many users displace their smartphone frequently and before it actually breaks. In addition to that, phones need to be replaced more often as it is getting increasingly difficult to repair them. This is mostly due to the fact that manufacturers are trying to create more elegant and slimmer designs, resulting in the inability to open the device (e.g. to exchange the battery) because relevant parts are glued together. Another factor shortening the lifespan of smartphones is that of planned obsolescence, an approach of designing consumer goods that quickly become obsolete and thus require regular replacement (Greenpeace, 2017). For phones, one example would be lacking support of software upgrades for existing hardware (Spinks, 2015). In 2015, the average smartphone lifecycle in the USA, China, and major EU economies ranged from 17.7 months to 2.35 years (United Nations University, 2017). Such frequent replacements in addition to an ever-increasing number of global smartphone owners and insufficient product take-back and material reuse contribute to a rapidly growing e-waste stream (Greenpeace, 2017). In 2016, 44.7 million metric tons of e-waste were generated worldwide, which corresponds to 6.1 kilogram per citizen (kg/inh). That number is expected to rise to 52.2 million metric tons, or 6.8 kg/inh, by 2021. The United Nations University reports that of all the e-waste generated in 2016, merely 20% is documented to be collected and recycled. The remaining undocumented e-waste is most likely dumped, traded, or recycled under inferior conditions (76%) or disposed as residual waste in higher-income countries, where it is often incinerated or land-filled (4%). The incorrect and unsafe treatment and disposal of this undocumented e-waste through open burning or in dumpsites are highly damaging for the environment and human health (United Nations University, 2017). Lastly, the growing number of smartphones being manufactured combined with a higher product complexity lead to greater amounts of energy that are being used for the production process. As most of

this energy comes from conventional fossil fuels, this results in further negative impacts for the environment (Greenpeace, 2017).

2.2. Political reactions and regulations

The above-mentioned social and environmental issues linked to the production of consumer electronics have induced policy makers to react with new legislations. The first major step towards increased transparency in the consumer electronics sector was taken by the US when the Dodd-Frank Wall Street Reform and Consumer Protection Act was passed in 2010. Section 1502 of the Act refers to conflict minerals and requires all publicly traded companies in the US with products that contain tin, tungsten, tantalum or gold to annually report whether these minerals in their supply chains originated in the DRC or neighbouring countries. If so, the firms are obliged to provide details about the due diligence measures taken to determine their source (U.S. Commodity Futures Trading Commission, 2010 and Enough Project, 2018). Furthermore, a new EU law, aiming to assure that EU importers of any of the four conflict minerals meet the OECD's international responsible sourcing standards, will come into force in January 2021. The so-called Conflict Minerals Regulation will require EU companies to verify that they obtain these minerals and metals from responsible and conflict-free sources only (European Commission, 2017). Recently, international governments are increasingly reacting not specifically to negative impacts caused by the consumer electronics sector, but to global sustainability issues in general. In September 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development and included 17 Sustainable Development Goals (SDGs) that target various social and environmental areas such as poverty, (gender) inequality, or climate action. While the goals are not legally binding, governments are expected to establish national frameworks that will eventually also affect corporate activities (United Nations, 2019). For example, goal 12 "Ensure sustainable consumption and production patterns" foresees an environmentally sound management of chemicals and all wastes, a substantial reduction of waste generation

through prevention, reduction, recycling and reuse, and the encouragement of particularly multinational companies to implement sustainability practices (United Nations, 2019b). In order to achieve these targets, governments must inevitably cooperate with companies and, if necessary, further adapt national legislation to push firms in that direction.

3. About Fairphone

Fairphone originates from an initiative started in 2010 by Waag Society in cooperation with ActionAid and Schrijf-Schrijf, that was directed at raising customer awareness about conflict minerals in consumer electronics. Three years later, Waag Society's Creative Director Bas van Abel realized "that raising awareness isn't the same as creating alternatives" (Fairphone, 2018, 13) and he founded Fairphone, a social enterprise with the mission of making electronics fairer for everyone involved. The ultimate goal was to create new relationships between people and their phones and to motivate the entire industry to act more responsibly by establishing a viable market for ethical consumer electronics. Its founding investor is Waag Products BV, a social impact incubator and the sister organization of Waag Society. While Fairphone started with just five employees in 2013, it quickly expanded to 65 employees by the end of 2017. The Fairphone1 (FP1) was launched in December 2013 and production was funded through a pre-sales campaign where 20,000 customers invested €325 each in Fairphone – a start-up that has never produced a smartphone before. When all 25,000 phones sold out right away, the social enterprise created a subscription list to gauge interest for a second batch of Fairphones (Fairphone, 2018). In May 2015, Fairphone became a Certified B Corporation, meaning a for-profit organization that meets a high standard of social and environmental performance, transparency and accountability (B Lab, 2019). The Fairphone 2 (FP2) was available for pre-order in the company's online shop in July 2015 and officially launched in December the same year. Continuous strong demand lead Fairphone to launch refreshed FP2s with a new cover design and color selection in October 2016 which also marks the company's first step towards customization.

Moreover, the FP2 is the first smartphone to receive the Blue Angel certification, an eco-label organized by the German federal government that sets high standards for environmentally friendly product design (Blue Angel, 2018 and Fairphone, 2018). Although Fairphone plans to finance its activities through the sales of its phones in the long run, the company currently depends on external funding to allow for its rapid growth. In 2017, it received a total investment of €6.5 million from both current shareholders and new impact investors such as Pymwymic and DOEN Foundation (Fairphone, 2018). These new investments for upscaling the production, processes and staff allowed Fairphone to launch the Fairphone 3 (FP3) in August 2019 under the motto "dare to care" (Gouwens, 2019). So far, the company only supplies the European market, but it has announced ambitions to ship abroad in the future (van Abel, 2014).

3.1. Fairphone's approach to increase its phones' fairness

In order to enhance the social and environmental impacts of its operations and thus increase the fairness level of its phones, Fairphone focuses on the following four pillars of positive impact:

Increasing longevity

Following the motto "The most sustainable phone is the one you already own" (Lacle, 2019), Fairphone aims at increasing its phones' lifespan in order to minimize the environmental footprint. By creating the first modular phone where components such as display, speaker, camera, and battery can be simply and quickly replaced, Fairphone enables users to repair and even upgrade their devices by themselves. The social enterprise incentivizes and supports its customers' do-it-yourself approach by selling spare parts for its phones and cooperating with iFixit to create repair tutorials for its users (Fairphone, 2019). An example for the company's easy upgradeability and repairability approach was the introduction of two new camera modules for the FP2 in September 2017 that allowed owners to upgrade their devices from an 8MP rear camera with single flash to a 12MP rear camera with dual flash and from a 2MP to a 5MP front

camera. These new modules give users access to the latest technology without needing to re-place their entire phones (Bleekemolen, 2017).

Reducing e-waste

Fairphone is committed to reduce the global electronic waste through recycling and by encour-aging the reuse of its phones, gradually advancing towards a circular economy. To ensure that valuable materials can be reused, Fairphone introduced its take-back program where customers receive a cash refund on FP3 orders for returning their old Fairphone (€40 refund) or any other phone (€20 refund) (Fairphone, 2019b). The company has also introduced a New Life Edition, offering its customers refurbished, lightly used FP2s at a lower price but with the same two-year warranty as a brand-new device (Lempers, 2019). Moreover, Fairphone has commissioned two renowned professors in the field of recycling, circular economy and sustainable technolo-gies for metallurgy with a research on the best method for recycling its FP2. The research com-pared three potential recycling routes, namely smelting, dismantling and shredding, and con-cluded that dismantling leads to the most optimized recovery of materials and the least envi-ronmental footprint. As this method relies on partially dismantling the FP2, the study proves that an easy-to-dismantle device offers advantages for recyclability and hence represents a strong argument in favor of the company's modular design approach. Fairphone plans to use the results of the recyclability study to better manage the end of life of its products, determining for instance the types of future recycling partnerships and methods (Fairphone, 2018).

Integrating fairer materials

Aiming to increase industry and consumer awareness and to create a positive change for people and the environment, Fairphone is working on incorporating fairer, recycled, and responsibly mined materials into its phones (Fairphone, 2019c). Since its founding, Fairphone focuses on mapping its supply chain in order to trace the materials used in its phones and make stepwise improvements. Regarding the mining industry, the company's top priority is on the four conflict

minerals gold, tin, tungsten, and tantalum. Fairphone started by joining initiatives for sourcing conflict-free tin and tantalum in 2013. In January 2016, it achieved to create the first-ever Fairtrade gold supply chain for the consumer electronics industry, integrating Fairtrade certified gold in its FP2 (Gerritsen, 2016). In June the same year, Fairphone managed to incorporate conflict-free tungsten into its phone production process, having finally established traceable supply chains for all of the four internationally recognized conflict minerals (Gerritsen, 2016a). In 2017, Fairphone worked together with The Dragonfly Initiative to conduct a materials scoping study reviewing 38 materials found in the FP2. The scope of the study was to gain a better understanding of the social and sustainability issues associated with each material as well as the opportunities for improvements. Analysing the results, the company could identify ten materials that are used heavily in the consumer electronics industry while being most critical for phone functionality and decided to particularly focus on those materials through research, new initiatives and collaborations (Gerritsen, 2017).

Improving working conditions

The last pillar of Faiphone's sustainability strategy aims at creating better working conditions and improving the job satisfaction for workers along the smartphone supply chain. To sustainably improve the labor conditions in the smartphone manufacturing sector, Fairphone cooperates with a variety of production partners, labor rights experts and NGOs (Fairphone, 2019d). For example, the company works closely together with its main production partner Arima to improve employee satisfaction, working conditions and employee retention in the China-based factory, where the final assembly of the Fairphones takes place. Following an extensive assessment and employee satisfaction survey conducted by the 3rd-party NGO Economics Rights Institute, Fairphone and Arima have developed a three-year action plan with monthly activities and targets. To reach these goals, both parties have committed to invest $100,000 each year in improvements based upon employee input and expert advice (Kouwenhoven, 2019). Fairphone

is also an active member of the Clean Electronics Production Network (CEPN), a multi-stake-holder initiative that is targeted on moving the electronics sector towards zero exposure of workers to toxic chemicals in the manufacturing process (Fairphone, 2018).

3.2. Tensions

Shortly after the release of the FP1, which was a licensed design from the Chinese manufacturer Guohong, Fairphone started to consider gaining more control over the product design in order to have more influence on materials and supplier selection and make autonomous design decisions that enhance sustainability, longevity and recyclability. When Guohong, which was managing most of the supply chain, stopped manufacturing phones already after two years of production, Fairphone faced serious challenges: The social enterprise had to build up a stock of spare parts with its limited financial resources to be able to support the FP1 as long as possible. However, Fairphone already started running out of spare parts in early 2017, and at that point, most of the original parts were no longer being manufactured and renewed production of other parts was unaffordable due to the small volumes the company required. Eventually, Fairphone was forced to stop supporting (i.e. stop selling spare parts and supporting any software upgrades) the FP1 in July 2017. In effect, this meant that the company was only able to support the FP1 for three and a half and the FP1U (a second, upgraded batch of the FP1) for merely two and a half years – a phone that was built for long-lasting use (Fairphone, 2018). This hard lesson convinced Fairphone to put its previously mentioned design-related considerations into practice and the company decided to take control over the design of its next phone, the FP2. For doing so, Fairphone had to search for engineering, design and manufacturing partners that would be capable to implement its modular and sustainability-enhancing design approach. More than the selection of suitable partners, there was also the challenge of coordinating the collaboration between these partners to ensure that the design, engineering and manufacturing processes were being adequately matched (Hebert, 2015).

Yet, the process of increasing control of the design and choice of suppliers was not straightforward and came along with some serious production-related issues, which the company transparently acknowledged in its impact report: *"There's no denying it: we had some rough moments on the product side. The primary issue was related to the availability of individual components, leading to major production delays and lots of waiting for Fairphone owners"* (Fairphone, 2018, 6). The deeper-lying causes ranged from quality issues with components and non-sufficient inventory levels of suppliers to unexpected pauses in manufacturing, resulting in the company's inability to offer a consistent supply of products through its online store or various partner channels. Consequently, online sales figures were below the projections for 2017 although all manufactured phones sold out, which had a direct impact on the company's finances. Despite frequent delivery delays, Fairphone managed to sell 9,545 phones via its online shop to new customers. During delivery stops, 35,000 visitors signed up to receive alerts as soon as the FP2 would be back in stock (Fairphone, 2018). While this shows that many customers were patient enough to wait for their phone or spare parts, other consumers ended up being frustrated and searched for alternatives (Fairphone Community Forum, 2016a). Apart from private consumers, the issue of Fairphone's inconsistent inventory also posed challenges for its business-to-business sales partners including operators, resellers, distributors, and other business buyers. In total, Fairphone sold 17,314 devices through these channels in 2017 (representing a 29% increase compared to 2016), but the company states that "the potential was far higher" (Fairphone, 2018, 27). As a countermeasure, Fairphone raised a second round of investments and was able to gather a total of €6.5 million. This funding was aimed at enabling the company to scale up production volumes, thereby increasing phone sales as well as gaining more leverage when negotiating with suppliers and manufacturers (Fairphone, 2018).

An additional difficulty for Fairphone seems to be technical reliance and performance of its phones. Having a look at the Fairphone Community Forum where members post questions and

topics for discussion, it seems that quite some Fairphone owners have several bugs with their FP1 and FP2: *"Hello everyone! I'm new here, just got my phone maybe three weeks ago, been waiting since July. There are so many things not working, is this normal?"* (Fairphone Community Forum, 2017). The technical problems reported by owners range from frequent, random reboots, insufficient battery life (Fairphone Community Forum, 2016b) and charging issues to overheating and camera issues (Fairphone Community Forum, 2017). Checking other forums such as trustpilot (Trustpilot, 2019) or reddit (Reddit, 2017), Fairphone owners report on similar problems with their phones. However, as such forums are largely used by people having issues with their devices whereas those who are happy with their phones rather remain "silent", it is impossible to tell whether the number of owners reporting bugs with their Fairphones is unusually high compared to the industry standard. To better quantify the proportion of people that are having troubles with their Fairphones, a survey asking 213 owners about their FP1 and FP2 experience has been conducted. The survey shows that 84% of the 182 respondents who own or have owned a FP2 had issues with their devices that were not self-induced (Appendix 2a). 91% of these issues were categorized as "Technical performance issues", 26% as "Software-related issues" and 17% as "Not satisfied with the overall quality" (Appendix 2b). Furthermore, 35% of these issues are stated to have occurred within the first 6 months, while 31% occurred between the first 6 months and one year (Appendix 2c). Interestingly, the FP1 scores significantly better, with 47% of the 64 (former) FP1 owners reporting to have had issues with their phones that were not self-induced (Appendix 1a). In addition, the issues related to the FP1 have occurred later on average compared to the FP2 (Appendix 1b). This survey naturally includes only a rather small sample of all Fairphone owners, and its results must be treated with caution. However, the high rate of reported issues occurring within the first year – particularly with the FP2 – strongly indicates room for improvement in order to reach a larger customer base. Another interesting aspect is the fact that 80% of FP2 owners who already had issues with their

FP2 answered with "Rather yes" when being asked whether they would purchase a Fairphone again as their next phone (Appendix 2d). This points to a customer segment that seemingly values the many social, environmental and other benefits of the phone to such an extent that it outweighs the apparent technical shortcomings of the phone. Still, if Fairphone wants to expand its business beyond this niche customer segment which so very strongly supports the Fairphone project itself, the company needs to improve the technical performance of its phones.

4. Competitors

As the case study aims at providing students solely with the most relevant information to solve case-related questions, only three competitors are presented in the following. While Apple and Samsung are both no social businesses and do not follow a similar strategy to that of Fairphone, they are increasingly working on integrating more sustainable measures and thus represent important players that need to be kept an eye on. In contrast, SHIFT follows an approach very similar to Fairphone and is hence to be seen as a close competitor.

Apple Inc.

Apple Inc. is an American multinational technology company that has revolutionized the mobile phone industry with the introduction of its first iPhone in 2007 (Frommer, 2011). The company is headquartered in California and designs, manufactures and markets consumer electronics including smartphones, personal computers, tablets, smartwatches and portable digital music players. Additionally, Apple Inc. sells a wide range of related consumer and professional software, operating systems, accessories, services, and third-party digital content and applications (Reuters, 2019). In its financial year 2018, the company realized a revenue of $265 billion and a net income of $59 billion (Reuters, 2019) and sold a total of 217 million iPhones globally (Liu, 2019). In terms of sustainability, Apple started to pursue more environmentally friendly approaches and has integrated several sustainability measures in the last couple of years. The

company has, for instance, joined the global renewable energy initiative RE100 in September 2016 after having announced its commitment to procure 100% of its electricity from renewable sources (Frangoul, 2019). In its Environmental Sustainability Report 2018, Apple claims to have succeeded in powering all of its "operations around the world with 100 percent renewable energy" (Apple Inc., 2018, 3). In 2017, Apple has declared the long-term goal of eventually making all of its products from recycled or renewable materials and is researching electronic recycling methods that support global e-waste reduction. With the help of a recycling robot, the multinational is already able to disassemble 15 different iPhone models and recover 14 elements such as plastic and lithium for recycling. Currently, tin and aluminium are already reused for new products such as the MacBook Air (Abril, 2019). However, it needs to be mentioned that Apple follows the strategy of releasing at least one new version of its iPhone every year in order to consistently pull in quarterly device sales figures in the tens of millions (Liu, 2019). This concept rather seems to contrast the company's commitment to reduce e-waste and environmental damage in general and calls Apple's credibility into question.

Samsung Electronics Co Ltd

Samsung Electronics Co., Ltd. is a South Korean multinational electronics company that manufactures a broad variety of consumer and industrial electronic equipment and products such as personal computers, monitors, televisions, home appliances and semiconductors. In addition, the company produces telecommunications equipment including mobile phones and Internet access network systems (Bloomberg, 2019). In 2018, Samsung realized total revenues in the amount of $209 billion and a net income of $38 billion (Reuters, 2019a) and shipped more than 292 million smartphones worldwide (Holst, 2019). Regarding its sustainability strategy, Samsung has received criticism from multiple environmental groups in the past, accusing the company of doing too little for tackling climate change. In its Guide to Greener Electronics, Greenpeace has criticized Samsung of lagging behind other smartphone manufacturers like Apple in

terms of clean energy as only 1,09% of the 16,000 GWh of the energy consumed by the multinational in 2016 was coming from renewables (Greenpeace, 2017a). As a reaction to such accusations and to catch up with competitors' sustainability strategies, the company has announced environmental measures including the replacement of plastic packaging with eco-friendly materials by 2020 (Samsung Newsroom US, 2019). Furthermore, Samsung has pledged to integrate 500 thousand tons of recycled plastics into its production and to collect 7.5 tons of disposed products by 2030 (Liptak, 2019). The company was also the first big brand offering a smartphone with a sustainability certification when it launched the TCO certified Samsung Galaxy S4 in May 2013 (Schipper, 2015). TCO Certified is an international third party sustainability certification for IT products issued by TCO Development, an organization owned by TCO (Tjänstemännens Centralorganisation), the Swedish Confederation of Professional Employees (TCO Development, 2018). However, more than 20 global occupational and environmental health, justice, and workers' rights groups demanded that TCO Development should withdraw its certification, calling it "green washing of the worst kind" (Electronics TakeBack Coalition, 2013). These groups argue that Samsung – apart from consistently denying basic labor rights like the right to organize and unionize (IndustriALL, 2013) – has been involved in severe work-related safety and health scandals with over 180 workers having developed occupational diseases including cancer as a consequence of being exposed to hazardous chemicals (Electronics TakeBack Coalition, 2013).

SHIFT GmbH

SHIFT is a German family business with about 20 employees that produces sustainable phones, laptops, tablets, and electronic accessories. The business was founded in 2014 without any investors on a crowdfunding basis with the goal to design consumer electronics in a stylish and minimalistic, yet sustainable way. By producing modular electronics that are to last as long as possible and can be easily and efficiently recycled, the family business aims at contributing to

a more circular economy. SHIFT ensures that its products are not produced through child labor and works to implement fair wages and working hours throughout the production process. Since 2018, SHIFT has its own technological manufactory in Hangzhou and is thus able to fully determine the manufacturing process and implement fair working conditions that include a flexible 40-hour working week and fair wages. Furthermore, the conflict material coltan is not part of any device and the company is working on convincing direct partners and suppliers to integrate fair and sustainable materials. SHIFT was, for instance, able to persuade its main circuit board supplier to use lead-free tin and tantalum-free micro capacitors. Its core product is the so-called SHIFTPHONE, a modular smartphone that can be easily and inexpensively fixed by owners themselves. Since its entry into the consumer electronics market, SHIFT has launched several smartphone models that range in performance and price: The SHIFT6m was introduced in 2017 and currently represents the highest-performing phone out of the company's product line. With more than 13 different modules, it is also the most modular phone available on the market. The company's product portfolio additionally includes "economy variants" that are cheaper and have slightly less powerful components such as the SHIFT5me (SHIFT GmbH, 2019).

TEACHING NOTE | PART B

5. Case Synopsis

Although consumers are increasingly becoming aware of negative social and environmental impacts linked to their consumption and are demanding companies to move their practices in a more sustainable direction, rather few people know what is behind a device they carry with them all day: their smartphone. Fairphone, a Dutch social enterprise that produces "fair" phones, aims to change that lack of customer awareness – and so much more, namely the way the whole consumer electronics industry operates. As governments around the world are

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