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Eco-innovation as a factor of competitiveness on the example of Volvo Car Corporation

Ekoinnowacje jako czynnik konkurencyjności na przykładzie Volvo Car Corporation

Abstract

The constantly progressing globalization processes, changing customer expectations, and increasing competition force entities to be constantly innovative. The 21st century, on the one hand, is about sound economic growth and the launch of all sorts of modern amenities in both business and social sphere. On the other hand, intense growth has also entailed degradation of natural environment, depletion of natural resources and effects of the global climate change that grow more and more serious. For this reason, there is an inevitable need for ecological innovations, also known as eco-innovations, which are generally intended to reduce or even stop destructive impact of human activity. The author's main objective is to present the essence of eco-innovation on the example one of the most innovative companies on the market which is Volvo. It should be noted that the company also pays considerable attention to eco-innovation which enables it to maintain its strong market position.

Keywords

innovation, eco-innovation, competitiveness, Volvo

JEL: O1, O2, O3, O4

Introduction

Present times with advanced and fast-paced technological progress, on the one hand, bring with them many valuable solutions and changes, while on the other hand they lead to further degradation of the natural environment. In order to survive in such a turbulent environment, people must become aware of the importance of ecology. Sustainable development makes the matter extremely open, showing to the world the essence and role of eco-

Streszczenie

Nieustannie postępujące procesy globalizacyjne, zmieniające się oczekiwania klientów, nasilająca się konkurencja wymuszają na podmiotach gospodarczych ciągłą aktywność innowacyjną. Mimo że XXI wiek charakteryzuje się wzrostem gospodarczym i wprowadzaniem różnego rodzaju unowocześnień w sferze gospodarczej i społecznej, wraz ze wzrostem gospodarczym degradacji ulega środowisko naturalne, wyczerpują się zasoby naturalne i coraz silniej odczuwamy oddziaływanie zmian globalnego klimatu. Z tego względu nieuniknione jest zapotrzebowanie na innowacje ekologiczne, zwane również ekoinnowacjami, które mają na celu osłabienie bądź redukcję destrukcyjnych oddziaływań ludzkich. Głównym założeniem autorki jest przedstawienie istoty ekoinnowacji na przykładzie jednej z najbardziej innowacyjnych firm na rynku – firmy Volvo. Należy podkreślić, że firma dużą uwagę poświęca właśnie ekoinnowacjom, dzięki którym utrzymuje swoją silną pozycję na rynku.

Słowa kluczowe

innowacje, ekoinnowacje, konkurencyjność, Volvo

innovations, which are one of the pillars of functioning in modern economies.

Eco-innovation is about transforming consumption and production patterns as well as development of technologies, products and services that reduce the impact on the environment. This is achieved through the launch of new solutions making better use of resources to reduce the footprint of economic activity (Executive Agency for Competitiveness and Innovation, 2009). Key types of eco-innovation include as follows (Węgrzyn, 2013, p. 138–148):

- eco-innovation in the field of products and production processes;
- social eco-innovations, concerning behavioral change, new consumption habits;
- organizational eco-innovations, for example eco-projects;
- institutional innovation, such as cooperation platforms, informal groups, networks established to address environmental issues;
- eco-innovation marketing, for example eco-labels, eco-packaging.

Eco-innovation can consist in any form of innovation resulting in or aiming at significant and demonstrable progress towards sustainable development, through reducing impacts on the environment, enhancing resilience to environmental pressures, or achieving a more efficient and responsible use of natural resources (European Commission, 2011, p. 2).

Innovative behavior of an economic entity can lead to strengthening its competitive position, which is perfectly evidenced by the example of Volvo. The main aim of this article is to present eco-innovation on example of one of the most innovative companies on the market which is Volvo. It should be noted that the company pays considerable attention to eco-innovation which translates positively to its strong market position.

Volvo Car Corporation¹ in outline

Volvo² Car Corporation, with its headquarters in Gothenburg, Sweden, is primarily, but not only, manufacturer of prestigious Volvo passenger cars, which sells in over 100 countries around the world. The largest recipient is the American market, and apart from it, the highest sales are recorded in such European countries as Sweden, United Kingdom and Germany.

While presenting the profile of Volvo, it is worth noting that the corporation is distinguished by its historically evident concern for safety, which appeared in the mind of the founders even before the creation of the first model. Volvo's philosophy is oriented towards human-wide values such as safety, quality and environmental protection. These determinants are the company's core values that guide all Volvo activities and products.

The history of Volvo goes back over 80 years and shows that the brand is not only about passenger cars. In 1927, the first production Volvo car, the Volvo ÖV4, rolled off the production line – on the island of Hisingen, Gothenburg. Since then, Volvo has grown from a small local factory to one of the world's largest manufacturers of trucks, buses and

construction machinery, with over 83,000 employees, factories in 25 countries and more than 185 markets.

It could be said that Volvo's driving force comes from its visionary entrepreneurs, technical innovators, talented employees and committed owners who, by working together, over the 80 years of Volvo's history, have built a strong and internationally respected brand.

An extremely important fact that should be remembered is that the Volvo brand also includes marine engines, which are part of the Group for almost as long as trucks. In 1929, the legendary U-21 engine was introduced to remain in production until 1962. The first bus, called the B1, was launched in 1934, and aircraft engines joined the expanding range in the early 1940s.

The Volvo Group, which started relatively modestly in the 1920s, has grown over time from a small manufacturing company to a global group. Nowadays it is one of the world's largest manufacturers of passenger cars, trucks, buses, construction machinery, marine engines and engine parts for the aviation and space industries. Table 1 on the next page briefly summarizes the history of Volvo.

Volvo Group customers are located in 180 countries around the world, mainly in Europe, North America and largely in Asia. The Volvo Group consists of almost 20 companies, including Volvo Trucks, Renault Trucks, Volvo Buses, Volvo Penta, Volvo Financial Services (VFS), Mack Trucks, Nissan Diesel, Volvo Construction Equipment, Volvo Aero, Volvo Logistics, Volvo 3P, Volvo Powertrain, Volvo Parts, Volvo Business Services Central Europe CE, Volvo Treasury and Volvo Group Real Estate (VRE).³

As for the Polish automotive market, Volvo Auto Polska started its operations in November 1991, conducting direct sales with 11 dealers throughout the country. In the first year of operation, car sales reached 120 units. 17 years later, in 2007, sales of these cars amounted to 3,700. In 2020, Volvo wanted to break its global sales record for the seventh time in a row. Unfortunately, the coronavirus pandemic effectively prevented the new sales record from being broken. Despite the economic slowdown, the Volvo brand came out of this period unscathed. After a significant drop in sales in the first half of 2020, the second half of the year turned out to be a record, with 391,751 cars sold, 7.4% more than over the same period of 2019 (Michalak, 2021).

Although Volvo is a respected manufacturer of passenger cars, trucks, marine engines, etc., this article focuses on Volvo as a passenger car company.

Table 1. Volvo history

Year	Event
1927	The first car leaves the factory. On the morning of April 14, 1927, the first Volvo car drove through the gates of the Gothenburg factory on the south-western coast of Sweden. The car was officially named ÖV4 and it was a convertible powered by a four-cylinder engine. The world's first Volvo was ready to go.
1944	The "little Volvo" appears. On 1st September 1944, a car was presented in Stockholm, which was to make Volvo an international car company. The "little Volvo", as it was called, was seen in Sweden as a herald of post-war prosperity – in two weeks PV 444 won 2,300 orders.
1953	The Duett model opens its chapter with the title of the station wagon. Volvo Duett was presented as "two cars in one" – for both work and leisure. This model started a long history of the company's estate line, and over time Volvo has become synonymous with this practical body type. Since then, more than 6 million Volvo estate cars have been built.
1955	Start of exports to the USA. In August 1955 the first PV 444 was unloaded at Long Beach, California. Despite skeptical comments, two years later Volvo Cars became the second largest import brand in California, and by 1974 the United States became the brand's largest market at the time.
1959	Three-point seat safety belt. Volvo engineer Nils Bohlin has introduced three-point seat belts into series production of PV 544. The company waived its patent rights so that everyone could benefit from this solution. It is estimated that to date, the three-point seat belt has saved over a million lives.
1976	The US security pattern. Volvo's international reputation as a leader in advanced safety was confirmed when the US government purchased 24 Volvo 240 cars for extensive crash tests. As a result of the tests, Volvo was then officially selected as the benchmark for setting safety standards for all new cars.
1991	A car with four unique innovations. Four pioneering solutions were introduced with the launch of Volvo 850: a transverse five-cylinder engine, Side Impact Protection System (SIPS), seat belt system self-adjusting for height on the front seats, and Delta-link rear suspension. It was also the first of the brand's larger front-wheel drive models.
2002	Volvo's first SUV. The launch of Volvo XC90 was a worldwide success. This model redefined the large SUV segment and within a few years became Sweden's most important export product.
2013	The brand's first production plant in China. Volvo's first complete production plant outside Europe was launched. The plant was established in Chengdu, where, initially, Volvo S60L and XC60 were manufactured.
2015	Second-generation XC90 ushered in a new chapter in Volvo history as it integrated a completely new design language, new technologies and new Scalable Product Architecture (SPA) platform.
2017	The first compact SUV. Volvo XC40 is the first model based on the Compact Modular Platform (CMA) that has set the brand's new standard for design, communication and safety. It was also the first car model available under the Care by Volvo monthly subscription service.
2018	Volvo's first production plant in the USA opens in Charleston, South Carolina, making Volvo Cars a truly global car manufacturer with factories in Europe, Asia and North America.
2019	The first all-electric SUV. Volvo XC40 Recharge P8 was the first fully electric SUV. This model was based on the XC40 bestseller and was the first Volvo to feature a completely new Android-based infotainment system.

Source: own elaboration based on: *Volvo. Nasze dziedzictwo*. <https://www.volvocars.com/pl/v/discover/heritage> (access: 03.02.2022).

Innovativeness of Volvo

The essence of innovation is an issue dealt with by exact sciences as well as social sciences. Therefore, there is no single universally applicable definition of this concept. In addition to technical innovations, one can also distinguish cultural, marketing, organizational and psychological innovations.

For this reason, the concept of innovation is understood and considered extremely broadly. It

applies to all spheres of life, from new solutions to economic or social life, to new intellectual and cultural trends. In common understanding, "innovation" means something new and different from existing solutions. Generally speaking, an innovation is a new quality not seen before – the implementation of something new, a newly introduced thing, a novelty or a reform. Such a translation of this concept is valid both in the terminology of the Polish language and in other

countries. This is due to the strong influence of Latin sources, as the very term innovation in Latin is *innovatio*, that is, renewal.

Volvo has been a pioneer in every generation. Moreover, it is the creator of the most important inventions and improvements in the history of

Table 2. Volvo's innovation performance over decades

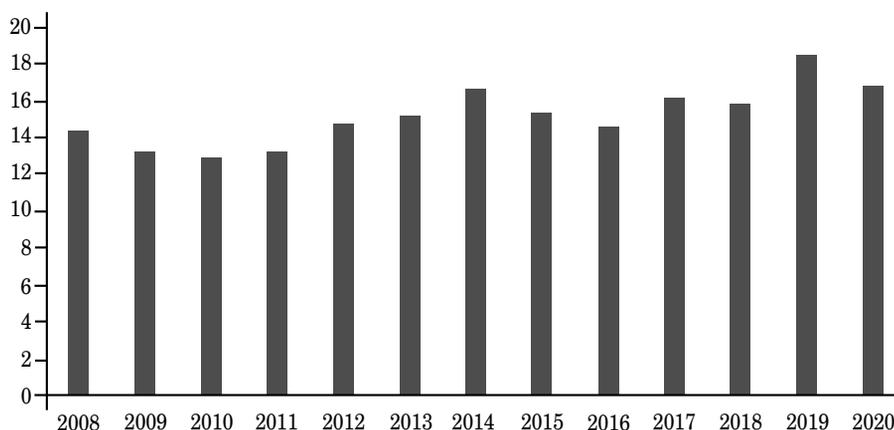
Years	Examples of Volvo's innovative activities, in many cases safety-related
1940	<ul style="list-style-type: none"> • safety cage • laminated windscreen
1950	<ul style="list-style-type: none"> • air vents to defrost the windshield • windshield washers • three-point seat belts at the front and two-point seat belts at the rear
1960	<ul style="list-style-type: none"> • dashboard covered with soft upholstery • the first rearward-facing child seat tested • rear window defroster • brake discs for all wheels • secure door locks • headrests for the front seats • inertia seat belts • heated rear window • reinforced roof structure
1970	<ul style="list-style-type: none"> • seat belt reminder and rear three-point seat belts • rear door lock to prevent opening by children • hazard lights and bulb function sensor • side impact protection • energy absorbing bumpers • safe position of the fuel tank • headlight washers and wipers • daytime running lights; reinforced roof structure, etc.
1980	<ul style="list-style-type: none"> • protection against sliding out from under the seat belt • front and rear fog lamps • door opening warning lights • anti-skid system • ETC (Electronic Traction Control) traction control system • third brake light located in the rear window • three-point seat belt for the center rear passenger • airbag for the driver • reinforced roof structure
1990	<ul style="list-style-type: none"> • SIPS (Side Impact Protection System) • automatic height adjustment of seat belts • front passenger airbag and side airbags • DSA (Dynamic Stability Assistance) system • ROPS (Roll Over Protection System) • WHIPS (Volvo's Whiplash Protection System) • air curtains, etc.
2000	<ul style="list-style-type: none"> • ISOFIX attachments with an infant seat directed rearwards • two-stage airbags • safe third row of seats • RSC (Roll Stability Control) system • ROPS system • crossbeam protecting other vehicles against effects of collision • SCC (Volvo Safety Concept Car), etc.

Cont. Table 2

Years	Examples of Volvo's innovative activities, in many cases safety-related
2010	<ul style="list-style-type: none"> • pedestrian detection with automatic complete stop • a system to prevent unintentional driving off the road • combined safety functions. Connected innovations • Slippery Road Alert and Hazard Light Alert • use of cloud communication to share critical data between vehicles; this enables early warning of slippery stretches of road and of vehicles having flashed hazard warning lights, helping to give the driver enough time to slow down • oncoming mitigation by braking system that minimizes the effects of a collision with an oncoming vehicle • E.V.A. initiative (Equal Vehicles for All)
2020	<ul style="list-style-type: none"> • speed limiter • Google Automotive System

Source: own elaboration on the basis: *Dziedzictwo innowacji z zakresu bezpieczeństwa*. <https://www.volvocars.com/pl/v/car-safety/safety-heritage> (access: 03.02.2022) and materials of Volvo Car Corporation.

Figure 1. Volvo R&D expenditure (SEK million) in the years 2008–2020



Source: own elaboration on the basis: <https://www.statista.com/statistics/469263/research-and-development-expenses-of-volvo-group/> (access: 04.02.2022).

vehicle safety and keeps constantly improving safety levels of users. It is noteworthy that, for the sake of safety, the results of his discoveries are made available to the public in order to raise safety standards in the widest possible sphere of society.

In building an innovative business environment, expenditure on R&D activity plays an important role. When analyzing Figure 1, it can be seen that the level of expenditure has an upward trend, with some slight fluctuations. Generally, Volvo's efforts are evident to invest more and more financial resources in this activity.

The Volvo Group's activities are largely based on technological innovations, so it should come as no surprise that the corporate structure also includes

Volvo Technology, Volvo Information Technology and Volvo Technology Transfer⁴.

Volvo Technology (VTEC) develops new technical and business solutions mainly for Volvo Group companies. It is an innovative company dedicated to the development of new technical and conceptual solutions for products and processes in the transport and automotive industries. The largest customers are companies from the Volvo Group and Volvo Car, as well as selected suppliers. In addition, Volvo Technology carries out strategic programs and expert tasks related to innovation. It involves in both domestic and international research programs in which universities, research institutes and other enterprises also participate.

VTEC employs over 350 professionals and is headquartered in Lundbystrand, Sweden, and Chalmers Science Park in Gothenburg, as well as at Volvo's plants in Lyon, France and in the USA.⁵

As for Volvo Information Technology (Volvo IT), it provides solutions for all areas of the industrial process. The company's customers include companies from the Volvo Group, as well as Volvo Car Corporation and other global industrial companies. Volvo IT has offices in many countries around the world, and its activities cover a wide spectrum of IT areas.⁶

Bearing in mind the information presented, it can be safely stated that the company strives for continuous development. Taking into account changing market conditions and customer expectations, it endeavors to increase its innovation in many areas of its operation. Importantly, it focuses much on the issue of environmental degradation, which is the subject of the next part of this article.

Eco-innovativeness of Volvo

In general, eco-innovation can be defined as any form of innovation aimed at making significant and visible progress towards the goal of sustainable development, by reducing the environmental impact or achieving greater efficiency and responsibility in the use of resources, including energy. Eco-innovation is a constantly evolving concept and must therefore be responsive to change.⁷

As the former CEO of Volvo Cars, Hakan Samuelsson said, "sustainability is as important to us now as safety is". Volvo wants to become climate neutral by 2040, which it considers the greatest challenge the company has ever faced. The company's activities are aimed at protecting people's lives both inside and outside its cars. Now

it intends to protect our planet with the same commitment (Figure 2).⁸

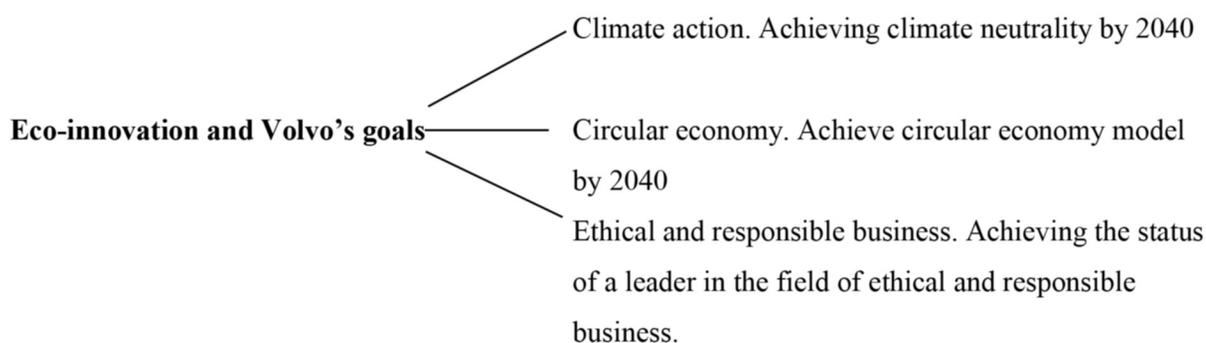
In pursuit of its goals, in 2017 the company became the first known car manufacturer to announce full electrification. In 2019, all its models became also available in electric versions. Two years later, in 2021, the C40 Recharge model was released. It was the first Volvo to be designed only in a fully electric version. For 2025, it is assumed that all-electric models will account for 50% of all sales. And for 2030 it is planned that each new Volvo model will be fully electric.

However, electrification is not enough. The company said it needed to reduce all direct and indirect sources of emissions. It decided to face the problem of CO₂ emissions in its supply chain and all operational activities. This means adopting the principles of circular economy. Consequently, as a temporary step towards meeting its 2040 climate neutrality target, Volvo aims to reduce its lifecycle carbon footprint by 40% between 2018 and 2025.⁹

It should be emphasized that Volvo supports the goals of the Paris Agreement. Climate change is a global problem and therefore requires cooperation of countries from all over the world. In 2015, world leaders agreed on new ambitious targets to combat this phenomenon. Overall, the Paris Agreement is an action plan to limit global warming. Its most important elements are (European Commission, n.d.):

- long-term goal: governments have decided to keep the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above these levels;
- contribution: before and during the Paris Conference, countries submitted their Comprehensive Action Plans to reduce emissions (so-called nationally determined contributions);
- aspirations: governments have agreed to present their action plans every 5 years, each time setting more ambitious goals;
- transparency: countries have decided – for

Figure 2. Eco-innovation and Volvo's goals



Source: own elaboration on the basis: *Zrównoważony rozwój*. <https://www.volvocars.com/pl/v/sustainability/highlights>, 03.02.2022.

transparency and oversight – to report to each other and to the public on how they are meeting their goals;

- solidarity: EU countries and other developed countries will continue to finance climate action to help developing countries reduce emissions and resist the effects of climate change.

Importantly, the Science Based Targets (SBTi) initiative, a collaboration between the Carbon Disclosure Project (CDP), the United Nations Global Compact, the World Resources Institute (WRI) and the World Wide Fund for Nature (WWF), approved Volvo's ambitious plan to become a climate neutral company by 2040. According to SBTi, the company's emission reduction targets are in line with the Paris Agreement targets to limit global warming to well below 2 °C. compared to pre-industrial levels. The company is committed to reducing the impact on our planet and is aware that it will require a global effort. Considering this, it is important to work with other like-minded companies, suppliers and organizations to improve the sustainability performance as well as change the industry as a whole.¹⁰

Sustainability is fundamental to the way Volvo Cars runs its business. The company has always strived to be a role model for others. It should be emphasized that its commitment to environmental protection dates back to the 1940s, and today it is greater than ever before (Table 3).

The circular economy approach is noteworthy. World natural resources are limited. That's why Volvo brand has committed to becoming a circular company by 2040 – by maximizing resource efficiency in relation to its vehicles, components and materials. The company focuses on the elimination of waste, greater use of recycled materials and remanufacturing and reuse of parts. Most companies (and people) still follow the rules of linear economy – they take the raw material, make the product, use it, and finally discard it as waste. Circular economy, instead, maximizes the use of resources already used by designing products geared towards durability, reusing and recycling. When starting the design process, the company looks at the entire lifetime of the vehicle and considers how to maximize the benefits over time. Importantly, a lot of valuable raw materials can be obtained from the dismantling and recycling process at the end of their service life.¹¹

In addition, Volvo has set itself its circular economy goals to significantly increase the share of recycled and organic materials in cars by 2025 (Figure 3).

Compared to producing new parts, remanufacturing parts consumes around 85% less raw materials and 80% less energy. Currently, Volvo is remanufacturing 36 different component groups, including engines, transmissions, turbochargers

and clutches. In 2020, more than 4,000 tons of CO₂ were saved thanks to the remanufacturing of over 39,000 parts. Recycling also minimizes the number of post-production waste. In 2020, 95% of the company's global production waste was recycled – thus avoiding additional carbon dioxide emissions and the producer was able to keep valuable materials in circulation. It also reduced the amount of resources needed. Steel is the waste most frequently recycled by the company. In 2020, over 176,000 tons of CO₂ were recycled, preventing generation of almost 640,000 tons of CO₂.¹²

Notably, Volvo Construction Equipment (Volvo CE) has announced a SEK 16 million investment at its Eskilstuna site in Sweden – including an arena for displaying electric and autonomous machines to customers, a new R&D test track and an energy recovery system at the plant. The first investment is the expansion of the center for the design and construction of prototype vehicles. Volvo CE will extend the existing 45 hectare area of the Customer Center by adding further 12 hectares – primarily for testing electric and autonomous vehicles, but also for presentation of those on its current offer. An investment of SEK 8 million in this innovative arena will enable Volvo CE to conduct customer demonstrations of prototype machines in realistic, demanding, and, at the same time, completely safe conditions. The arena will use 5G technology and will be equipped with battery charging infrastructure. At the Technology Center, Volvo CE is also investing in a test track for research and development related purposes with electromobility and automation. The track, which costs SEK 3 million, is now used for electric excavators and HX2 autonomous carriers which were tested during the award-winning Electric Site project in autumn 2018 at a quarry near Gothenburg.

Meanwhile, Volvo CE is focusing on reducing the energy consumption of the axle and transmission plant in line with the company's overarching sustainability goals. There are two main sources of energy consumption in the factory. The first is the so-called A 'curing point' in which machine parts are first heated to a high temperature and then cooled to strengthen their surface and extend their service life. The second is the paint shop, where heating the components speeds up the drying process of the paint. It should be added that the company has invested SEK 5 million for an energy recovery system that will store approximately 60% of the heat emitted by the curing point and discharge it to the paint shop. It is estimated that this system will reduce the total energy consumption of the factory by 4%. Moreover, Volvo CE is gradually implementing alternatives to fossil fuels. The existing combustion engine fleet at the Eskilstuna Customer Center will therefore run on Hydrogenated Vegetable Oil (HVO). HVO fuel can

Table 3. Eco-innovativeness of Volvo over the period 1940–2020

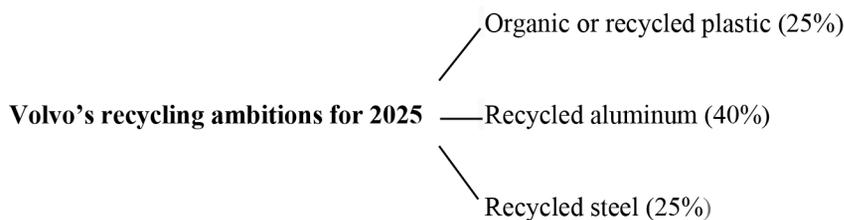
Year	Event
1945	Regeneration of spare parts. As early as 1945, in the small Swedish town of K�oping, Volvo started to remanufacture gearboxes. Today, the Volvo Cars Exchange System offers one of the widest ranges of remanufactured spare parts in the automotive industry.
1972	Volvo's first environmental statement. The company presented its first environmental declaration at the First United Nations Stockholm Conference on Environmental Protection. Its CEO at the time, Pehr G. Gyllenhammar, acknowledged that Volvo products have a negative impact on the environment and declared that the company was determined to do something about it.
1976	Launch of the Lambda® sond. The introduction of the three-way catalyst with a lambda sond was a breakthrough for the environment and reduced harmful emissions by up to 90%. It was one of the most important inventions in the control of exhaust emissions and to this day remains an integral part of all modern cars powered by internal combustion engines.
1991	The world's first CFC-free car. In the past, ozone-depleting chlorofluorocarbons (CFCs) were often used in car air conditioning systems. In response to this environmental problem, the company launched the world's first CFC-free car, and two years later eliminated these harmful substances from the entire Volvo model range.
1996	Environmental requirements for suppliers. Volvo's suppliers have always played an integral role upon the company's path toward sustainable development. Therefore, in 1996, environmental requirements began to be met by suppliers and the use of certain chemicals in all of the company's products was voluntarily limited.
2008	Electricity used in factories in Europe comes from renewable sources. In order to reduce the environmental impact of Volvo production, decision was made to rely solely on hydropower for production facilities in Europe.
2012	The world's first plug-in hybrid car with a diesel engine. Volvo V60 was the world's first plug-in hybrid diesel car that could either run on a diesel engine alone, run as a hybrid with both an internal combustion engine and an electric motor engaged, or run as an electric car. It was something no other manufacturer could offer at the time, making this model an attractive alternative, offering low fuel consumption and a long range.
2018	A climate neutral engine plant in Sweden. The first plant in Volvo's global production network to become climate-neutral is situated in the Swedish city of Sk�ovde. It was a significant step towards achieving the company's vision of a climate-neutral manufacturing operation by 2025. At the same time, Sk�ovde became one of the few climate-neutral automotive factories in Europe.
2019	The first all-electric SUV. With the addition of the all-electric Volvo XC40 Recharge to the model range, not only the first all-electric SUV has been launched, but also one of the safest cars on the road. Its range was over 400 km, and the charging time to 80% of the battery capacity was only 40 minutes.
2019	Climate Neutrality by 2040. The company has announced that it wants to remain climate neutral by 2040 along the value chain, in line with the objectives of the Paris Agreement. At the same time, it aims to reduce carbon dioxide emissions per vehicle by 40% between 2018 and 2025, including emissions from activities and supply chain, as well as vehicle exhaust emissions.
2019	All models available as hybrids. This year Volvo took another step towards electrifying its entire model range. They promised that every new car launched from 2019 on will be also offered in version partially or fully powered by electricity. It is therefore the first major premium car brand to offer a plug-in hybrid powertrain on all its models.

Source: own elaboration on the basis: *Volvo. Długa tradycja zr ownoważonego rozwoju*. <https://www.volvocars.com/pl/v/sustainability/heritage> (access: 04.02.2022).

successfully replace diesel fuel. It is made of vegetable and animal fats (mainly rapeseed oil or slaughterhouse waste) and, depending on the raw material, allows to reduce CO₂ emissions by up to 90%. It does not require any additional modifications to the engines.¹³

The financial community plays a key role in Volvo's eco-innovation and has a key role to play in

accelerating the transition to a low-carbon economy. The company wants to support the growing commitment of this community to sustainable investment. Volvo's green funding framework aligns its sustainability strategy with opportunities that lead to a positive impact on the shared environment and society. The framework is in line with both the ICMA (Green Bond Principles,

Figure 3. Volvo's recycling ambitions for 2025

Source: own elaboration on the basis: *Volvo. Zrównoważony rozwój*. <https://www.volvocars.com/pl/v/sustainability/circular-economy> (access: 04.02.2022).

GBP) and the LMA's Green Loan Principles (GLP) rules. The company's income is to be allocated to strategic clean transport projects: increasing the production of all-electric cars and battery assembly; investments in the Polestar brand, aimed at becoming a leading role in electrification; and research and development for zero emission vehicles, new electric propulsion systems and platform technologies.¹⁴

It can be concluded that Volvo is observing the changing trend and market conditions, also bearing in mind the constantly aggravating problems related to environmental degradation. This makes it one of the most eco-innovative companies in the industry.

Eco-innovativeness and competitiveness of Volvo

It seems obvious that in order to be competitive, an enterprise must demonstrate not only relatively high productivity, efficiency and effectiveness, but also flexibility, entrepreneurship and innovation. A competitive entity is one that can provide goods and services to the world market at a lower cost than its competitors and is able to offer goods recognized as branded, unique and innovative. Thanks to this, it gains and strengthens its advantage over its competitors (Bossak & Bieńkowski, 2004, p. 96).

Innovations are of particular importance among the factors determining the competitiveness of enterprises. They are not only crucial to the pace and directions of economic development, but also, to a large extent, they determine the forms and structure of international cooperation between enterprises, thus largely contributing to a company's international competitiveness. The pace and scope of creating and implementing innovations by a business are pivotal to its competitive advantage.

Volvo is the largest Swedish car manufacturer in the history of automotive industry, which is one of the leaders in the automotive market. Volvo cars

are known primarily for their high level of safety and reliability. Volvo prides itself on introducing a number of safety solutions that over the years have become standard in many models of other brands. Following market challenges and customer expectations, Volvo also focuses on eco-innovation.

Analyzing the company's data, it can be seen that it sells 1.2 million cars annually. By increasing its eco-innovation, 50% of cars sold are fully electric cars. It is noteworthy that a half of all sales are made online.¹⁵

It seems obvious that innovation and further eco-innovation can translate into strengthening of the company's position against the competition. Volvo Cars announced its best six-month results in terms of sales and operating profit in its 94-year history, in the face of increasing demand for its cars in all regions. The financial report for the last six months of 2021 showed that the company achieved the income of SEK 141 billion, an increase of 26%. The basis for such significant growth is huge demand and the success of the company's diversified offer. Operating income for the first six months of 2021 was SEK 13 billion, representing an operating margin of 9.4%. Sales increased 41% compared to the 2020 pandemic period, however the company also saw a significant 12% increase compared to the first six months of 2019, which is a more relevant comparison as it relates to a period not affected by the pandemic. Annual rolling sales volume is around 775,000 vehicles, slightly below the 800,000 vehicle target set 10 years ago.

Volvo, following foresight and following the trends and conditions in the market, is constantly developing and creating an eco-innovative model to be copied by other entities. According to Hakan Samuelsson, former Volvo Cars CEO, the company continues to achieve rapid growth despite an industry-wide semiconductor shortage, but more importantly, it has shown itself to be a transformation leader in the automotive industry. Volvo Cars aims to become the fastest-changing company in the sector by selling all-electric vehicles by 2030. The demand for models from the Recharge line demonstrated the attractiveness of Volvo's electric cars in the first half of the year. Sales of fully

electric and plug-in hybrids have grown significantly and now account for 25% of the global volume. This is the highest share of electric vehicles in relation to total sales among traditional car makers.¹⁶

"Innovation in Green Consumption", which is nothing but eco-innovations in production processes, and even in enterprise management, have become a significant market trend in recent years. Eco-innovations are solutions that allow for full recycling, without harming the environment at the stage of production, processing and recycling of the product. The concept also includes products that are fully biodegradable in processes that do not pose threat to the environment or human health (Instytut Rozwoju Myśli Ekologicznej, n.d.).

It is worth adding here that Volvo Cars aims to operate in full closed circuit. It anticipates recycling of batteries, components replaced under warranty, recovery of plastics, etc. (Bednarz, 2022) It can be safely argued that this closely coincides with the situation in the economy and the financial problems of the society. In pursuit of full electrification, Volvo has launched its second fully electric model, Volvo C40 Recharge. At the same time, it has strengthened its online sales strategy to meet changing consumer behavior. From now on, all fully electric models will be available exclusively on volvocars.com, and customers will be able to place their orders at their preferred location: at home, at a Volvo showroom or with the help of a dealer. Currently, the company sells online in several markets thanks to a transparent and flexible offer for customers, including service packages, consumption packages and insurance. Subscriptions for Volvo Cars – Care by Volvo increased fivefold in the first six months, exceeding 10,000 contracts.¹⁷

Providing batteries from sustainable sources is critical to Volvo Cars' transformation. Accordingly, the company plans to join forces with Northvolt as a strategic partner to jointly develop and manufacture next-generation battery cells. To focus on electrification, Volvo Cars is transforming its internal combustion engine business into a new entity, Aurobay, with Geely Holding as a major shareholder. With Aurobay, Volvo Cars will achieve synergy as well as guarantee the supply of competitive combustion engines for its hybrid powertrains until the company offers all-electric vehicles.¹⁸

One can dare to say that Volvo's innovation, with a particular focus on eco-innovation, meets the expectations of today's customers. According to the *Menadżer Floty* magazine "The outbreak of the coronavirus pandemic meant that 2020 would not be written in gold in the history of the automotive industry. The sales results of new cars have dropped to values not seen in Europe for previous

thirty years. The Polish market, excluding delivery vehicles, decreased by 32.11% in the period from January to the end of July 2020. Everyone expected it to be a difficult year for the industry due to new CO₂ emission limits imposed on car manufacturers operating in the EU and stricter penalties for exceeding them. Meanwhile, it was not carbon dioxide, but a small virus that turned the entire industry on its head. Excluding niche producers, everyone else is counting their losses. It turns out that they are very diverse. As unlikely as it sounds, the market recession caused by the pandemic has meant that the share of premium brands in the entire passenger car market in Poland increased once again. The top five players in this segment lost significantly less than the average of all other brands. Only one importer from the top 30 largest brands in Poland showed a minimal increase in sales. Everyone else was losing. Importantly, Volvo lost the least. Exactly –2.58%. In the period from January to the end of July, the brand achieved 6,695 registrations in Poland. A year ago it was 6,869. In July, the market saw a slowdown in downward trends also among other brands. However, a dozen or so companies have a loss of 40–60% to catch up. Thanks to all these data components, Volvo in Poland maintained 13th position in sales, and the brand's share after seven months of this year amounts to 3.01%. In the same period last year it was 2.1%.¹⁹ It seems obvious that they significantly contribute to reducing the effects of the degraded natural environment and turn out to be a kind of idea for a better tomorrow.

Conclusions

One can dare to say that in the face of contemporary globalization challenges, eco-innovations play an extremely important double role. Firstly, by being modern solutions of a product, process or organizational nature, they contribute to the development of innovative business entities. They enable them to reduce production costs, increase their competitive advantage on the market, or enter new markets. This, in turn, results in an opportunity to create new jobs and reduce the level of unemployment.

Eco-innovation has an additional positive impact on the endangered natural environment. As has already been observed, their essence comes down to, among others, achieving sustainable development by limiting environmental impact or achieving greater efficiency and responsibility in the use of increasingly depleting resources, including energy (Prystrom, 2013, p. 90).

Eco-innovations, bringing with them the above effects, also give an opportunity to minimize destructive impact of human activity on of the natural environment. The ideal model seems to be the one adopted by Volvo group, whose innovative aspirations are based on care for the natural environment.

As Hakan Samuelsson says, Volvo Cars has been transforming for ten years and has been successful in this field. The car industry is changing even more now than before, and Volvo is determined to be at the forefront of this change.²⁰ Considering the above, it can be shyly stated that Volvo's eco-innovation may surprise us more than once and pave the way for others to copy.

Notes/Przypisy

- ¹ Volvo Auto Poland.
- ² The word "volvo" comes from the Latin language, more precisely from the infinitive *volvere* which means "to roll". This infinitive in the first-person singular takes the form *volvo*, meaning "I am rolling".
- ³ *Struktura Grupy Volvo*. <http://www.volvo.com/group/poland/pl-pl/Volvo+Group/our+companies/VGStrukturaLanding.htm> (access: 07.01.2019).
- ⁴ *Ibidem* (access: 07.01.2019).
- ⁵ *Volvo Technology*. http://www.volvo.com/group/poland/pl-pl/Volvo+Group/our+companies/volvotechnologycorporation/Volvo_Technology.htm (access: 07.01.2019).
- ⁶ *Volvo Information Technology*. <http://www.volvo.com/group/poland/pl-pl/Volvo+Group/our+companies/volvoinformationtechnology/VIT.htm> (access: 07.01.2019).
- ⁷ Decision No 1639/2006/EC of the European Parliament and of the Council of 24 October 2006 establishing a Competitiveness and Innovation Framework Programme (2007 to 2013). <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:310:0015:0040:en:PDF> (access: 08.05.2023).
- ⁸ *Zrównoważony rozwój*. <https://www.volvocars.com/pl/v/sustainability/highlights> (access: 03.02.2022).
- ⁹ *Ibidem*.
- ¹⁰ *Ibidem*.
- ¹¹ *Volvo. Zrównoważony rozwój*. <https://www.volvocars.com/pl/v/sustainability/circular-economy> (access: 04.02.2022).
- ¹² *Ibidem*.
- ¹³ *Innowacje i zrównoważony rozwój wyznacznikiem inwestycji VOLVO CE w przyszłość ośrodka w Eskilstunie*. <https://www.volvoce.com/polska/pl-pl/about-us/news/2019/innovation-and-sustainability-key-when-volvo-ce-invests-for-the-future-in-eskilstuna/> (access: 07.04.2022).
- ¹⁴ *Ibidem*.
- ¹⁵ *Our story*. <https://www.volvocars.com/intl/v/our-story> (access: 10.05.2022).
- ¹⁶ *Rekordowe wyniki Volvo Cars w pierwszym półroczu 2021 r.* <https://media.poznajvolvo.pl/2021/08/rekordowe-wyniki-volvo-cars-w-pierwszym-polroczu-2021-r/> (access: 21.09.2022).
- ¹⁷ *Ibidem*.
- ¹⁸ *Ibidem*.
- ¹⁹ *Volvo Car Poland zwiększa udziały rynkowe*. <https://menadzerfloty.pl/rynek/volvo-car-poland-zwieksza-udzialy-rynkowe/> (access: 21.09.2022).
- ²⁰ *Rekordowe wyniki Volvo Cars w pierwszym półroczu 2021 r.* <https://media.poznajvolvo.pl/2021/08/rekordowe-wyniki-volvo-cars-w-pierwszym-polroczu-2021-r/> (access: 21.09.2022).

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Jarosław Woźniczka

CIEMNA STRONA MARKETINGU

Posługując się prostą metaforą, można stwierdzić, że zarówno w podręcznikach, jak i w praktyce rynkowej prezentowana jest zwykle jasna strona marketingu. Przejawia się ona m.in. w nastawieniu przedsiębiorstw na zaspokajanie potrzeb nabywców, dostarczaniu im użytecznych produktów, oferowaniu ich na korzystnych warunkach i zapewnianiu odpowiedniego poziomu obsługi. Marketing ma jednak także swoją ciemną stronę. Za pomocą tego określenia opisuje się wszystkie te działania rynkowe, które można uznać za nieetyczne, nielegalne, nieuczciwe, oszukańcze czy manipulacyjne, a których efektem jest powstawanie różnego rodzaju szkód dla nabywców, konkurentów i konkurencji, środowiska naturalnego lub innych grup interesariuszy.

Prezentowana monografia jest poświęcona eksploracji ciemnej strony marketingu. Zawiera swoisty katalog nieetycznych lub co najmniej kontrowersyjnych praktyk rynkowych, takich jak m.in. ukrywanie wyników badań marketingowych, fałszowanie ich i dezinformowanie nabywców oraz opinii publicznej, oferowanie nabywcom szkodliwych lub wadliwych produktów, żądanie od nich nieuczciwych cen za określone dobra lub usługi, wchodzenie w zмовы cenowe, stosowanie korupcji w działaniach sprzedażowych, dyskryminowanie nabywców poprzez oferowanie im gorszych warunków zakupu niż innym klientom, oszukiwanie ich za pomocą komunikacji marketingowej czy manipulowanie nimi przez sprzedawców, telemarketerów i pracowników obsługi klienta. Poszczególne przejawy ciemnej strony marketingu zostały zidentyfikowane i objaśnione, przedstawiono mechanizmy i możliwe skutki tego typu działań, reakcje nabywców wobec nich oraz stosowane sposoby przeciwdziałania im.

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