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What are hypermarkets and discount chains doing for sustainability?

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SUMMARY

The aim of this study is to highlight the contribution of hypermarkets and discount chains to sustainability in Hungary. Within the framework of the article, we examine to what extent the United Nations' 17 Sustainable Development Goals (SDGs) are reflected in the objectives of the different chains. An important part of our analysis is the conceptual approach to sustainability and its presentation. When addressing this issue, the specific role of various actors in the food trade, their presence in the market space, as well as the measures taken to reduce waste, ensure safety, and minimize losses cannot be ignored. Artificial Intelligence and COVID-19 have brought significant changes to the food retail sector, as a result of which food trade is shifting considerably towards online or so-called "mute" trade. Consequently, online sales, automation and robotization processes, as well as sustainability, social innovation, and personalization in sales will gain more importance in the future.

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1. INTRODUCTION

One of the central issues today is the concept of sustainability and its interpretation. Sustainability now appears in politics, in the business world, and even in everyday professional and non-professional discussions. This is no coincidence: over the past decades, it has become increasingly clear that in the long term we will only be successful if we harmonize environmental, economic, and social considerations. However, how this should be done is far from obvious. Different disciplines approach it from different angles: there are definitions emphasizing economic, ecological, or social aspects.

In this overview, we examine how the concept of sustainability has developed in the field of commerce from its beginnings to the present day, which international frameworks have shaped it, and what particularities can be observed within Hungarian academic literature. The first comprehensive formulation of the idea of sustainability is linked to the 1972 report of the Club of Rome, The Limits to Growth (Meadows et al., 1972). The analysis warned that continuous growth in population, industrialization, and consumption could lead to collapse in the long run due to the planet's finite resources. This approach was clearly environment-centered, focusing on ecological limits while considering social and economic factors secondary. Although the report was strongly debated, it fundamentally contributed to the emergence of the concept of sustainable development in international political and scientific discourse. The most well-known and most frequently cited definition of sustainable development comes from the 1987 report of the United Nations World Commission on Environment and Development (WCED), "Our Common Future" (the Brundtland Report), which defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 43). The core element of this definition is the concept of needs, with special attention to the basic needs of the world's poor, as well as the idea that technology and social organization impose limits on exploiting the environment's carrying capacity. In 2015, world leaders adopted at the UN Sustainable

Development Summit under the title: "Transforming Our World: The 2030 Agenda for Sustainable Development". The UN's Sustainable Development Goals (SDGs), adopted in 2015, encompass 17 goals and 169 targets, serving as a compass for governments, businesses, and civil organizations, supplemented by measurable indicators (Veresné Somosi & Sikos T., 2023). The SDGs are based on the triple-pillar model of sustainability (economic, social, and environmental dimensions). At the same time, they have faced criticism, as some goals may contradict one another for example, the tension between promoting economic growth and adhering to ecological limits (Easterly, 2015). For the corporate sector, the ESG (Environmental, Social, Governance) framework provides an important guideline, making sustainability measurable from an investment and financial perspective. While ESG contributes to the interpretation of sustainability in business terms, critics argue that it often leads to formalism and greenwashing (Kotsantonis et al., 2016). In the following, we review the role and commitments of hypermarkets and discount chains in sustainability.

Among international studies addressing this topic, the UNCTAD (United Nations Conference on Trade and Development) report The Future of Sustainable Trade, published in 2024, is of particular significance. The report highlights three major thematic areas:

1. **Regulatory transformation**, closely aligned with the targets formulated by the United Nations in 2015, including decent working conditions (SDG 8), action against climate change (SDG 13), the sustainable use and conservation of oceans, seas, and marine resources (SDG 14), and the protection of terrestrial ecosystems (SDG 15) (Berning & Sotirov, 2023; Marx et al., 2021, 2024).

2. **Challenges for developing countries**, which primarily concern making global trade more ethical by ensuring fair access for developing economies to international markets—thus facilitating responsible consumption and enabling production to reach markets under equitable conditions (SDG 12) (Bemelmans et al., 2023; Elamin & Fernandez de Cordoba, 2020; Fiankor et al., 2020; Andersson, 2019).

3. **Voluntary sustainability standards (VSS)** for policymakers and businesses (Bennett, 2017).

In the following section, considering the above perspectives, we examine how hypermarket and discount retail chains engage with and contribute to sustainability within the retail sector.

2. The Role of the Hypermarkets and Discount Stores in Sustainability

Under the current political, economic, and environmental conditions, the implementation of the UN's 2030 Agenda for Sustainable Development is becoming increasingly important, in which food retail chains also play a significant role (Table 1).

Table 1

The contribution of domestic hypermarket and discount chains to the achievement of individual SDG goals

SDG aims	*Tesco*	*Spar*	*Auchan*	*Lidl*	*Aldi*	*Penny Market*
No Poverty, SDG1			X	X		
Zero Hunger, SDG2	X	X	X	X		X
Good Health and Well-Being, SDG3	X	X	X	X	X	
Quality Education, SDG4				X		
Gender Equality, SDG5	X	X	X	X	X	X
Clean Water and Sanitation, SDG6				X	X	X
Affordable and Clean Energy, SDG7	X	X	X	X	X	X
Decent Work and Economic Growth, SDG8	X	X	X	X	X	X

Industry, Innovation and Infrastructure, SDG9						
Reduced Inequalities, SDG10	X					
Sustainable Cities and Communities, SDG11	X	X				
Responsible Consuption and Production, SDG12	X	X	X	X	X	X
Climate Action, SDG13	X			X	X	X
Life Below Water, SDG14	X		X			
Life on Land, SDG15	X		X	X	X	X
Peace, Justice and Strong Institutions, SDG16						
Partnerships for the Golas, SDG17			X			

Source: Table 1 was compiled using secondary qualitative content analyses, the sustainability annual reports of the six retail chains, as well as professional articles and press materials from civil society organizations; own research.

There are hardly any significant differences between hypermarkets and discount stores in terms of the UN Agenda 2030 goals. Nevertheless, Tesco and Lidl have the broadest spectrum of contributions among them (Sikos T. & Szendi, 2024).

Tesco entered the Hungarian market in 1994, when it acquired the Globál store network. Today, it operates more than 200 retail units. The company opened its first supermarket in Szombathely, followed by its then most significant store opening in 1996 at the Pólus Center, covering 2,500 m². Currently, 52% of Tesco's store network consists of hypermarkets (109 stores), with its largest business units now reaching a floor area of 15,000 m² (Sikos T., 2019). The key to Tesco's international and domestic success lies in its innovative business approach: it has always strived to apply the most modern methods and tools in developing its retail network and business units. To this end, the company continuously monitors changes in consumer behavior and seeks to adapt to market demands. Its stable operation is also supported by the fact that its business philosophy has hardly changed since its foundation. Today, its portfolio remains diversified, focusing on clothing, food and beverages, as well as services.

In the domestic market, however, the company faces serious challenges from competitors, particularly discount chains. Lidl, as its biggest competitor, has been present in the Hungarian food retail market since 2004. Lidl is committed to both society and the environment. In its daily operations, it assumes economic, social, and ecological responsibility. It maintains open communication with its customers and employees and actively supports the circular economy, climate protection, and fair wages.

Part of Lidl's sustainability strategy is to "make high-quality food accessible to everyone," supporting through donations:

1. disadvantaged families and children,
2. healthier nutrition for children requiring hospital care,
3. and the care of animals living in shelters.

Its business policy also includes tackling food waste, which it partly achieves through precise inventory management in its stores. Within the framework of the circular economy, it aims to reduce plastic use in its stores by 20% by 2025. Affordable and Clean Energy (SDG 7) is of particular importance to both hypermarkets and discount stores, and Lidl is at the forefront in this area.

Today, Lidl's main competitors in the discount sector are Aldi (annual turnover per store in 2024: HUF 3.46 billion) and Penny Market (annual turnover per store in 2024: HUF 2.64 billion), although both are behind Lidl's figures (annual turnover per store in 2024: HUF 7.53 billion) (Trade Magazin, 2024a). Penny Market's philosophy is based on cooperation and supporting retailers, as this is a prerequisite for the viability and development of small businesses. Penny Market entered Hungary in 1996 and has since expanded its store network to 228 units. It supplies its stores from three logistics centres (Alsónémedi, Karcag, and Veszprém). The discount chain offers about 2,000 products in its stores, 40% of which are purchased from Hungarian producers, while domestic products account for around 50% of its private label range. Its private label products sourced from Hungarian suppliers often bear Hungarian names, such as *Karát*, *Dárdás*, and *Sissy*.

In terms of location, every fourth Aldi store, every fifth Lidl store, and every tenth Penny Market store operates in the capital. Penny Market's business strategy places a central focus on supplying rural areas. Its corporate social responsibility is similar to that of its competitors, with strong emphasis on supporting disadvantaged families and children. It gives

particular attention to assisting children undergoing hospital treatment, as shown by its support programs for paediatric oncology departments.

To protect health, Penny Market emphasizes the UN's *Clean Water and Sanitation* program (SDG 6) and takes steps toward a circular economy (bottle return, used battery collection, environmentally friendly shopping bags, etc.). Its efforts also extend to green energy (SDG 7).

Aldi likewise supports the UN Sustainable Development Goals, with particular focus on ensuring the sustainability of its private label products across the entire value chain and promoting responsible purchasing. Accordingly, Aldi has set out to contribute to the following SDGs: Responsible Consumption and Production (SDG 12), Climate Action (SDG 13), Decent Work and Economic Growth (SDG 8), and Life on Land (SDG 15), pursuing these goals even at store level.

Both hypermarket and discount chains use inventory management systems that minimize food stock losses, and any surplus that does occur is donated for charitable purposes.

3. Methodology

To compare sustainability strategies, we applied the radar method, which makes it possible to visually represent multidimensional performance. Our choice of this method is justified by its suitability for comparing multiple variables and its ability to provide a graphical representation of actors in the food market. The selected radar chart method makes outlier values visually prominent, thereby serving as an important comparative tool when examining several variables. In another field, Mosley and Mayer (1999) also applied this method to compare international labor market performance. During the analysis, three dimensions were defined: social responsibility, environmental sustainability, and economic success, which can be presented in the literature as the three pillars of sustainability (the triple bottom line) (Elkington, 1998). Performance values related to each dimension were assessed on a Likert scale ranging from 1 to 5, where 1 indicates weak and 5 indicates outstanding performance. The values were determined based on qualitative content analysis and the processing of secondary sources (corporate sustainability reports, professional publications, press sources), ensuring comparability across different companies.

The advantage of the radar method is that it can simultaneously display company profiles along the three dimensions, thus allowing for the quick identification of relative strengths and weaknesses. While the triangle model is primarily suited for presenting the balance between the three dimensions of sustainability, the radar method highlights the differences between companies more effectively and enables the simultaneous comparison of multiple actors using the same metrics. This is particularly advantageous when the goal is not merely theoretical positioning, but the systematic, quantifiable comparison of performance. At the same time, the method has limitations, as scaling is based on qualitative foundations; therefore, the radar method allows for relative rather than absolute comparison among the examined food retail chains (Kozma, 2019; Hahn et al., 2015).

We analysed the sustainability profiles of six food retail chains (Tesco, SPAR, Auchan, Lidl, ALDI, and Penny Market) using the radar chart method. The scoring method formed the basis of the database. The scores were the results of secondary qualitative content analyses, derived from the chains' sustainability and annual reports, professional articles, and materials published by NGOs. For each chain, we applied standardized scoring for each dimension. If there were multiple indicators within a dimension, we used the intersection approach: when a goal was defined but implementation was weak, it was assigned a middle value of three.

However, the method also has limitations. One such limitation arises from changes in the measures themselves, which make it necessary to update the radar chart values whenever new initiatives appear. Another limitation concerns the depth of reporting by the retail chains, which may distort comparisons, as not all companies disclose their sustainability-related data with the same level of detail.

The numerical scale used in the radar chart method is defined as follows:

Social responsibility dimension:

1 = ad hoc practices,
2 = minimal efforts,
3 = standardized programs,
4 = stable and long-term programs, although their impacts are not yet widely measurable (e.g., Lidl's domestic programs, which are not global),
5 = measurable and widespread impact.

Environmental sustainability dimension:

1 = minimal initiatives,
2 = basic actions with a narrow focus,
3 = defined targets and partial results,

4 = innovative solutions, though not yet widely implemented (e.g., several Lidl stores operate with rooftop solar panels, but not all),
5 = certified targets and wide-scale implementation.

Economic success dimension:
1 = limited results,
2 = stable but very slow growth,
3 = efficiency across multiple areas,
4 = significant revenue growth and high market share,
5 = measurable performance improvement and competitive advantage.

Assigning a score of 5 indicates advanced programs and measurable multi-year initiatives; however, it does not represent the absolute maximum because the objectives have only been partially achieved, or the impact is not fully demonstrated or transparent. These scores express the relative performance of the chains compared with one another (Table 2).

The scores assigned to each dimension are based on content analysis of corporate documents. The "Sources" column lists the initiatives and measures on which the scoring was based. In evaluating the scores, we considered the scope of the programs (local or global), the degree of integration (regular or ad hoc initiatives), and measurability (quantitative data such as Spar's proportion of domestic suppliers).

Table 2

Comparison of sustainability strategies using the radar chart method

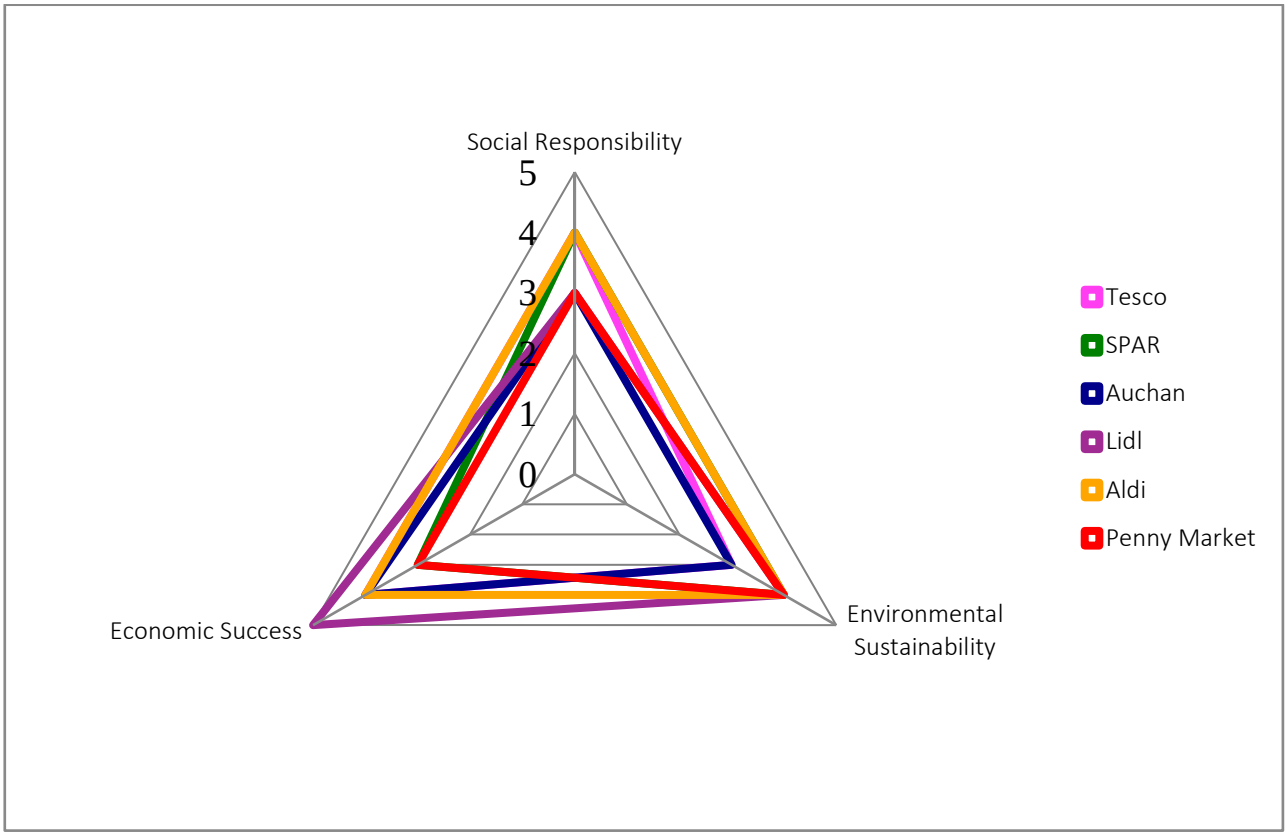
Retail Chains	*Social Responsibility*	*Environmental Sustainability*	*Economic Success*	*Sources*
Tesco	4	3	4	Tesco Perfectly Imperfect program; food donation, (The Guardian, 2020; The Times, 2021)
Spar	4	4	3	Domestic supplier ratio >90%; energy-efficient developments; SPAR sustainability report, (BCSDH, 2022; Trade Magazin, 2024b)
Auchan	3	3	4	AI-based inventory management and markdown, (Smartway, FWMS); hypermarket energy (CSR Hungary, 2023a)
Lidl	3	4	5	Automated warehouse and logistics, robotic pallet handing, e-trucks, (Robotics & Automation Magazine, 2023; Trade Magazin, 2024a; Vanderlande, 2022)
Aldi	4	4	4	57% reduction in food waste in the UK, circural packaging targets, (ALDI UK, 2023; ALDI SÜD Group, 2024)
Penny Market	3	4	3	ISO 50001 certification, solar panel investments, Munch cooperation, (Civilhetes, 2021; Trade Magazin, 2023b)

Source: Based in sustainability reports, own calculation

4. TRIANGLE MODEL OF HYPERMARKETS AND DISCOUNT STORES

The sustainability triangle model of food retail chains is built on the following dimensions: (1) **economic success**: revenue, market share, and growth potential, (2) **social responsibility**: support for employees, consumers, and local communities, and (3) **environmental sustainability**: reducing the ecological footprint through energy efficiency and waste management.

The key message of the model is that true sustainability can only be achieved if all three dimensions are in proper balance (Figure 1).



Source: own calculation

Figure 1: The sustainability model of hypermarkets and discount stores

Based on the model, it can be concluded that in Tesco's case, outstanding performance is observed in the dimension of social responsibility, primarily supported by the *Perfectly Imperfect* program and food donation practices (The Guardian, 2020; The Times, 2021, 2023). At the same time, its environmental performance is constrained by its large logistical footprint and the complexity of its supply chain (The Guardian, 2022). A key part of Tesco's strategy is robotization and digitalization, which enable more efficient inventory management, supply chain operations, and consumer demand forecasting.

SPAR shows strengths in both environmental and social dimensions: the share of domestic suppliers exceeds 90%, while its food rescue programs and energy-efficient solutions (e.g., modernization of refrigeration technology) contribute to its sustainability performance (BCSDH, 2022; Trade Magazin, 2024b). In Hungary, SPAR cooperates with the Munch app to sell products close to expiration but still consumable, while surplus from INTERSPAR stores is regularly donated to charity organizations such as the Hungarian Maltese Charity Service (BCSDH, 2022) and the Hungarian Food Bank.

Auchan's strategy is more pronounced in the dimensions of economic success and innovation, particularly through the introduction of AI-based inventory optimization and markdown systems (Smartway, FWMS), which enable the rescue of millions of products annually (Zebra Technologies, 2022; CSR Hungary, 2023b). However, its environmental footprint is still significantly influenced by the high energy demand of its hypermarket formats. Automation and robotization play an increasingly important role in Auchan's operations. Nonetheless, its sustainability strategy also faces limitations, since the implementation of automated and AI-based systems requires substantial investments, which place a heavy burden on the chain.

Lidl performs the strongest at the intersection of economic success and environmental sustainability. Its automated warehouse solutions, robotic pallet handling, and logistical innovations contribute to efficient operations, while its energy-efficient hubs and electric truck deliveries reduce its environmental impact (Robotics & Automation Magazine, 2023; Vanderlande, 2022; TechHQ, 2024). A central element of Lidl's sustainability strategy is food waste reduction, supported by digital and AI-based tools. Its *Project Wasteless* program, for instance, uses AI solutions to manage products nearing expiration, enabling discounted sales and faster turnover.

Aldi shows balanced performance across all three dimensions. Its achievements in food waste reduction, packaging and circular economy targets, as well as digitalization and AI-based logistics solutions all contribute to its sustainability performance (Aldi UK, 2023; AI Expert Network, 2023; Celonis, 2022; Aldi Süd Group, 2024).

Penny Market's sustainability strategy in Hungary rests on several pillars: food waste reduction, supported by its cooperation with the Munch app; improvements in energy efficiency and renewable energy use; and strengthening corporate social responsibility. The chain has made significant progress in environmental sustainability, demonstrated by its ISO 50001 energy management certification, solar panel investments, and electric charging network, which support its commitment to climate neutrality (Civilhetes, 2021; Trade Magazin, 2023a). Its strategy also emphasizes greener transport and logistics. However, its performance in social responsibility and economic success is less remarkable, partly due to the nature of the discount model.

On the digitalization-robotization axis, the companies show different levels of maturity. Auchan experiments both in-store (AI-supported markdowns and labelling) and in format innovation (*unmanned "Auchan GO"*), serving the dual goal of enhancing customer experience and reducing losses (Hungary Today, 2022; CSR Hungary, 2023b). Lidl primarily focuses on warehouse automation, while Aldi deepens AI-based logistics decision support and tracking of sustainability KPIs (Robotics & Automation Magazine, 2023; AI Expert Network, 2023; CSR Hungary, 2023c). SPAR and Penny Market, embedded in local ecosystems, approach sustainability through practically scalable digital tools (dynamic pricing, food rescue platforms). Although there is limited evidence of physical robotization, they have already documented progress in energy and waste management (Trade Magazin, 2024b, 2023a; Civilhetes, 2021).

Based on our analyses, we can conclude that for all six food retail chains, the common denominators are reducing food waste and enhancing energy-efficiency strategies; however, they rely on different sets of tools and operate at varying levels of maturity to achieve these goals. Lidl and Aldi demonstrate notable progress in warehouse automation and data-driven logistics optimization; SPAR and Penny Market leverage domestic ecosystem connections and achieve measurable benefits through pragmatic digitalization and energy management solutions. For all actors, the next development cycle will hinge on strengthening data integrity and supply chain transparency, expanding AI solutions, securing green energy supply, and broadening circular packaging and upstream innovations. The study highlights the strengths and weaknesses of the chains' strategies and enables comparison along the three dimensions mentioned above. The visual representation provided by the radar chart helps decision-makers review the data of each chain and identify areas requiring improvement. However, it is also important to acknowledge the study's limitations. The scoring is qualitative, which may introduce subjectivity, and it relies on publicly available sources; therefore, internal corporate practices and data could not be incorporated into the analysis.

5. Summary

In Hungary, the food retail sector is dominated by multinational chains (Tesco, SPAR, Auchan, Lidl, Aldi, and Penny Market), which approach the issue of sustainability from different perspectives. What they have in common is that although they have made progress in several areas, none of them can fully achieve a balance between economic success, social responsibility, and environmental sustainability. Tesco's strength lies in its fight against food waste, supported by several innovative programs and cooperation with civil partners. At the same time, its environmental impact related to transport and logistics remains significant. Aldi's rapid growth is underpinned by energy-efficient and cost-effective operations, but its narrower product range makes it less capable of involving local producers. Auchan's advantage is its support for the local economy and environmentally friendly initiatives, but its sustainability strategy is less transparent. Lidl's main strength is its strict supplier control and the development of sustainable private-label products, though its discount model also entails increased transport burdens. Overall, it can be concluded that while the chains operating in the Hungarian market show strengths in certain areas, none of them are able to fully represent all dimensions of sustainability at the same time. At present, they tend to focus on specific priority areas, and sustainability often serves more as a tool in market competition and in strengthening consumer trust. The greatest challenge for the future will be whether they can find the right balance between economic, social, and environmental goals, as only then can they remain credible and competitive in the long run.

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Author's contribution

Tamás Sikos T.: Created ideas and hypotheses for study 50%, conceived and designed the study 50 %, collected the data 50%, performed the formal analysis 50%, validated the data and results 50 %, wrote the original draft 50 %, reviewed and edited the paper 50%, overall: 50 %.

Laura Nagy: Created ideas and hypotheses for study 50%, conceived and designed the study 50 %, collected the data 50%, performed the formal analysis 50%, validated the data and results 50 %, wrote the original draft 50 %, reviewed and edited the paper 50%, overall: 50 %.

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