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Cross-country comparison of sustainable e-commerce entrepreneurship impact on sustainable development goals implementation: The case study of Germany and India

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Abstract

E-commerce plays a significant role in driving global economic growth, and the integration of sustainable practices into business has given rise to the concept of Sustainable E-commerce Entrepreneurship (SEE). As the number of SEE initiatives continues to grow, examining their impact on implementing Sustainable Development Goals (SDGs) becomes crucial. This study aims to explore the disparities between German and Indian SEEs regarding their perspectives on SDG implementation. This study presents a unique approach by comparing the viewpoints of e-commerce entrepreneurs in the Indian National Capital Region of New Delhi and the Berlin-Brandenburg Region in Germany regarding SDG implementation through SEE activities. The interviewees from both countries were asked about three key aspects: (1) the current impact of SEE on SDGs implementation, (2) the future impact of SEE on a specific category of SDGs, and (3) whether e-commerce should be seen as a source of global patterns for SDGs implementation or should be tailored to local needs. Semi-structured interviews were conducted to gather data, and the scripted interviews were analyzed with the assistance of ATLAS.ti software. The study collected semi-structured interviews with ten Indian and nine German SEEs. The study's findings indicate that German SEEs place a greater emphasis on SDGs related to the biosphere compared to their Indian counterparts. This divergence in prioritization aligns with the socio-economic challenges currently faced by Indian society, which influences their focus on social and economic SDGs. Indian SEEs do not foresee significant contributions to improving the biosphere through SEE activities in the future. In contrast, German SEEs demonstrate an idealistic perspective on SDG implementation, with a stronger emphasis on the biosphere category of SDGs.

Keywords: E-commerce, entrepreneurship, sustainability, SDG, Germany, India.

Introduction

E-commerce entrepreneurship is a dynamically growing branch of business. According to Shopify.com (2022), the global value of all e-commerce transactions will exceed $8 trillion by 2026, meaning over 60% total value growth in five years. The rapid growth of the e-commerce sector encouraged entrepreneurs from various industries to join the online selling trend. The e-commerce revolution removed barriers to entering previously inaccessible small entrepreneurship markets. A case of market access democratization is Taoban Villages in China (Wei et al., 2020). Globalization offers numerous opportunities for enhancing sustainability through e-commerce, particularly in terms of implementing and accelerating the achievement of Sustainable Development Goals (SDGs) (Babenko et al., 2019). At the same time, other scientists argue that

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sustainability problems cannot be solved via identical/similar solutions. Some solutions must be tailor-made to the local circumstances and thus should be seen from the local perspective (Lewis & Cockrill, 2002). This research focuses on Sustainable E-commerce Entrepreneurship (SEE), which has been described as "a process of discovering, creating, and exploiting profitable opportunities for buying, selling, transferring, or exchanging products, services, and information within the frames of the Internet or Intranet with a focus on advancing Sustainable Development Goals" (Waliczko & von Kolpinski, 2022, p. 8). The idea of SDGs implementation was introduced at the United Nations Conference on Sustainable Development in Rio de Janeiro in 2012 as a set of universal goals that meet the urgent world's environmental, political, and economic challenges (UNDP, 2023a). The current direction of the SDGs was established in 2015 at the COP21 Paris Climate Conference. The COP21 set a precise structure for the implementation of 17 SDGs (See Appendix 1) and the evaluation of the results, which targets the reduction of CO_2 emission, diminishing the climate change and natural disaster risks, and effective protocols for crisis response (UNDP, 2023a). E-commerce plays a significant role in the implementation of SDGs in various aspects. Studies by Soluk et al. (2021), Yaşlak et al. (2021), and Huang et al. (2021) highlighted the impact of e-commerce on the development of rural and underdeveloped areas. All three studies were conducted in developing markets showing specific SDG implementation trends. On the other hand, George et al. (2021) highlights the impact of digital technologies to help address grand challenges to tackle climate change and promote sustainable development. Solutions provided by e-commerce contribute to breaking the glass ceiling of gender inequality, especially in countries where women's rights are limited (Suseno & Abbott, 2021).

The geographical location of this study has been carefully chosen based on the following criteria: (a) equal administrative status; (b) one of the regions has to be located in a developed market economy, and another one has to be located in an emerging market economy; (c) both locations have to be considered as the top startup hubs in their region; (d) location's significant potential for the SEE development. New Delhi and Berlin share the same administrative positions in the country as national capitals. Both cities are located at a similar position on the Global Startup Ecosystem Index. The Berlin startup ecosystem takes 12th place, while the New Delhi startup ecosystem is in 13th place (StartupBlink, 2022). This study extends the location area of the SEE from Berlin to the Berlin-Brandenburg Region (BB) and from New Delhi to the National Capital Region of New Delhi (NCR). It is necessary to extant the geographical location due to the high density of startups located outside the main cities, which significantly contribute to the Economy of Berlin and New Delhi (e.g., Potsdam near Berlin (Potsdam Science Park, 2022) or Gurgaon and Noida near New Delhi (Adhana, 2016)). Germany is G7 (2022) which unites the most developed economies in the world. World Economic Outlook (2022b) considers Germany one of the world's most developed economies. On the other hand, India as a member of BRICS (2022), is regarded by many significant Indexes such as (a) IMF (2022a), (b) Global Finance (2022), (c) FTSE (2022), as an emerging market. Comparison of the emerging (India) with the developed market economy (Germany) in the context of SEE's impact on the SDG implementation not only targets to identify the pattern in SDG implementation but also points to the differences in perception of sustainability between two different social and cultural backgrounds.

India's e-commerce market is constantly growing (Joseph P.T., 2019). It is expected to reach US$ 350 billion by 2030, which means a growth of over 300% in 2022 (India Brand Equity Foundation,

2022). The significant potential of the e-commerce market in India presents a unique opportunity to accelerate the process of SDG implementation via SEE. E-commerce provides opportunities for entrepreneurs, especially from rural and slum areas (Anooja, 2015). Due to the popularization of Internet access, India is mainly associated with the highly skilled cheap labor force (Kraemer et al., 2006), which presents a huge potential for rural and slum SEE growth (Raman & Chebrolu, 2007). For the reason mentioned above, the study has been conducted in the NCR as the area is not only one of the biggest startup hubs in India (StartupBlink, 2022) but presents a substantial social disproportion (Joshi et al., 2020) and environmental pollution level (Atiqur & Netzband, 2007; Sharan, 2014). Germany is the fifth biggest e-commerce market after China, the United States, Japan, and the United Kingdom (Statista, 2022b). Scientific literature considers Germany an early adopter of e-commerce solutions (Pantelimon et al., 2020). The share of online market purchases concerning traditional purchases is constantly growing. In 2023 it is estimated to reach 22% of the total transactions (Statista, 2022a).

Literature Review

Based on the findings of a systematic literature review on e-commerce entrepreneurship and sustainability by Waliczko and von Kolpinski (2022), there is a significant gap in the scientific literature that needs to be filled. Current scientific literature misses the qualitative cross-country comparison in the context of SEE and its impact on SDG implementation from the perspective of the entrepreneurs. To cover the literature gap, the study focuses on Indian and German SEE comparisons in their effort to implement SDG. The study uses semi-structured interviews as a tool for data collection. The novel approach enriches the contemporary qualitative study on e-commerce's impact on sustainability by comparing developing and developed regions. Current scientific literature is dominated by studies that are focused on one particular region. Those studies do not conduct a cross-country or cross-regional comparison of the locations' socioeconomic differences (Chang et al., 2019; Haryanti & Subriadi, 2022; Oláh et al., 2019; Sensuse et al., 2020). Studies also do not present the perspective of the entrepreneurs/ top managers on SDG implementation.

This study uses a mixture of sustainability-related theories. The Multilevel Sustainability Management Theory (MSMT) “aims to achieve greater long-term environmental and socio-economic well-being” (Starik & Kanashiro, 2020, p. 36). It is necessary to mention that MSMT is a highly practical theory as it has several implications “for educators, researchers, practitioners, and policymakers, including the need to consider urgent and immediate responses that address sustainability crises at multiple levels and in multiple levels” (Starik & Kanashiro, 2020, p. 1). To adjust the research criteria to the standards of SDGs, which are required to replicate the study in other regions, it is necessary to narrow the theory utilized in the research. According to Harrington (2016), sustainability also includes the development aspect directly related to the modern SDGs. According to Harrington’s theory, sustainability or sustainable development “aims to maintain or improve beneficial conditions (to sustain them), particularly with an improved capacity to extend desirable conditions over the long term” (Harrington, 2016, p. 365). The combination of the above-mentioned concepts allows the study to be conducted precisely as a cross-country comparison of SEE's impact on SDG implementation.

Research Question and Hypotheses

Research question: What is the difference between German and Indian SEEs' perspectives on SDG implementation?

The study presents a different perspective of e-commerce entrepreneurs from two significantly distinct locations. The goal is to discover the common patterns and differences in SDG implementation by Indian and German SEEs.

Hypothesis 1: German and Indian SEEs differ regarding sustainability focus.

Due to the significant differences in the geopolitical status of Germany (Encyclopedia Britannica, 2022a) and India (Encyclopedia Britannica, 2022b), both states are expected to put more effort into different categories of SDG. Based on the current scientific literature (Waliczko & von Kolpinski, 2022), SEEs from developed markets are expected to be more environmentally focused, while SEEs from emerging markets target socio-economic problems.

Hypothesis 2: SEE may support the implementation of SDG in both emerging and developed regions with the same global pattern rather than adjust to the local needs.

As early as 20 years ago, scientific literature has presented e-commerce as a global trend (Koenig et al., 2003). However, with time, e-commerce researchers began to discover the significant impacts of the EE on the local communities whose social and economic status may vary due to geopolitical conditions. One example is Taobao Villages (Wei et al., 2020) in China. This study presents the Indian and German e-commerce entrepreneurs' perspectives on this dilemma.

Hypothesis 3: The future impact of SEE impact SDG implementation is differently perceived by Indian and German entrepreneurs.

E-commerce broadly impacts sustainability, which is reflected in the vast majority of industries involved in the e-commerce (Escursell et al., 2021; Schöder et al., 2016). According to the scientific literature, SEE primarily focuses on implementing SDGs related to the economy, particularly SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure) (Waliczko & von Kolpinski, 2022).

Methodology

Sample Selection

Interviewees have been selected based on the following criteria (a) stage of development; (b) size of the SEE; (c) the relation of the interviewee to the e-commerce processes in the SEE; (d) sufficient knowledge of SDGs; (e) the impact of the SEE on SDG implementation. Interviews were collected in accordance with to snowball sampling methodology (Parker et al., 2019). Interviewees from each region have been asked to suggest potential interviewees. Each recommended interviewee has been screened based on the criteria described in this section. Ten Indian Interviewees (IIs) and nine German Interviewees (GIs) participated in the study (See Table 1). All interviews have been collected between September and December 2022.

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Table 1. Interview Participants

Region	Interviewee ID	Male (M)/Female (F)/Other (O)	Interview duration (Min:Sec)	Type of Industry (specific branch)	Position at the SEE
Berlin-Brandenburg	GI 1	M	33:50	Trade (Grocery)	Founder
	GI 2	M	29:08	Trade (Fashion)	Managing Director
	GI 3	M	26:46	Trade (Grocery)	Founder
	GI 4	F	14:16	Software Development (Logistic solutions)	Founder
	GI 5	M	14:55	Trade (Grocery)	Founder
	GI 6	M	34:55	Consulting (E-commerce solutions)	Founder
	GI 7	F	22:28	Trade (Grocery)	Founder
	GI 8	F	37:53	Trade (Grocery)	Founder
	GI 9	M	15:03	Trade (Office space rent)	Editing Director
New Capital Region of New Delhi	II 1	M	36:45	Trade (Spare parts retail)	Founder
	II 2	M	25:01	Trade (Tabaco)	Sales Director
	II 3	M	20:32	Trade (Spare parts retail)	CTO
	II 4	M	24:47	Trade (Spare parts retail)	Founder
	II 5	F	43:23	Trade (Fashion)	Founder
	II 6	M	20:46	Trade (Grocery)	CTO
	II 7	M	36:34	Digital Marketing	Founder
	II 8	M	24:25	Trade (Grocery)	CFO
	II 9	F	25:58	E-sport Betting	Business Director
	II 10	F	21:03	Trade (Fashion)	Founder

This study focuses on SEEs in the early stage of development, who focus their primary business activity in one of two regions, BB or NCR. In the study by Gupta et al. (2013), they pointed out stages of growth presented by Chaston (2010). Only entrepreneurs on the stage of *expansion* were selected for the interview. Expansion is the second level of company growth in which the company is developed enough to expand beyond the current market, thus making the very first impact on the SDG implementation. This study utilized the micro-entrepreneurship definition of OECD (2022), meaning that only SEEs with a size of up to 10 employees (OECD, 2022) have been selected. Each interviewee has a clear connection to the e-commerce processes at the SEE and holds a top management position. In order to ensure an equal understanding of the SDG concept, all the interviewees have been provided with information sources regarding the SDG available on the UNDP (2023b) and the Stockholm SDG wedding cake website (Rockström & Sukhdev, 2016).

The SEEs had to prove a direct or indirect impact on the SDG implementation. Direct impact refers to conscious activity directed at SDG implementation. Indirect impact refers to an unconscious action resulting from the specific circumstances caused by the local/global situation that results in supporting the implementation of one or more SDGs. Only SEEs that proved a direct or significant indirect impact on SDG implementation have been accepted to this study. Selected criteria are crucial to standardize and analyze the study findings. Furthermore, the above-mentioned criteria provide a structure for replicating the study in other regions.

Interview Design

This study applies semi-structured interviews for data collection. In order to achieve high-quality results, this study utilizes grounded theory for developing interview questions. Gubrium et al. (2012) described grounded theory with a specific focus on the studies applying interviews as the primary source of information extraction. For the reason mentioned above, the theory fits well with the concept of this study. The goal of the semi-structured interview questions is to obtain spontaneous questions from the interviewees within the frames of the topic (Kallio et al., 2016). In order to keep the structure, the semi-interview has been divided into six sections general sections: (a) introduction; (b) personal affiliation to the company and personal relation to the e-commerce; (c) company's business profile; (d) e-commerce and sustainability; (e) future of e-commerce and (f) additional comments (See Appendix 2.). Questions are inspired by this study of Oláh et al. (2019) and extended for the comparative analysis of two significantly different regions (Germany and India). In order to achieve substantial results, the interview questions have been adjusted based on the interviewees' answers and the general interview outcome. The first changes to the interview were implemented based on the first three interview results (Watling et al., 2017). This study applies the Stockholm SDG wedding cake concept (Rockström & Sukhdev, 2016) to classify the general areas of the SEE impact on SDGs. The Stockholm SDG wedding cake divides SDGs into three major categories economy, society, biosphere, and separate SDG 17 (partnerships to achieve the goal).

Data Analysis

Interviews have been conducted via the Zoom platform (2023). All interviewees were informed of their data protection rights and agreed to be recorded for the purpose of further analysis of the data. All interviews have been conducted in English. Recorded interviews have been scripted and then anonymized, meaning that all data that would allow personal identification of the interviewees have been removed from the script. At the next step, scripted interviews have been uploaded to the ATLAS.ti (2023) for further analysis. The research uses codes based on the SDGs and Sustainable Development Subgoals presented by the UNDP Agenda (UN, 2023). The codes have been prepared based on the rules set by the grounded theory (Corbin & Strauss, 1990). The Interviewees were divided into two groups Germany (for the Interviewees focusing on their primary business activity in BB) and India (for the Interviewees focusing on their primary business activity in NCR). The codes have been grouped according to the relevant SDG corresponding to the Interviewees' answers. The division into regions and SDGs makes the analysis more transparent and enables us to draw the general trend in the SDG implementation between GIs and IIs.

Results

The vast majority of IIs own/work in the Retail business sector, with a particular focus on fast-moving consumer goods (FMCG), machinery retail, and fashion. IIs, to a great extent, combine production with online sales/distribution. Most of the Indian SEEs participating in the study have a family character. Thus, family members specialize in certain aspects of business by creating micro and small SEEs as the extension of the larger family business. The strategy of Indian SEE differs from the German one, as German SEEs do not produce specific goods but act as a middleman between producers and customers (See Table 1.).

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> You have a lot of waste created through the packaging by the end consumer. There are many emissions since many companies just deliver by cars. Infrastructure in Germany is not that crazily developed yet. Government action on this part plays a significant role. It's not only the companies. The government sets the rule here mainly. – *GI 1*

Despite differences in the business approach between interviewees, it is possible to draw a pattern in the implementation of SDG by the SEE. The most urgent problem tackled by the SEE is CO_2 emission generated in the logistics process. Especially problematic for the SDGs implementation is last-mile delivery. SEE faces a dilemma in selecting a low-cost unsustainable logistic provider or a less affordable, sustainable delivery service. The last-mile delivery is expensive as it covers 28% (Brown & Guiffrida, 2014) of total delivery costs and generates up to 5% of total CO_2 generated by the supply chain (Lawton, 2021). Thus, the appropriate selection of the last-mile delivery provider is crucial for maintaining the sustainability and profitability balance of SEEs.

> *"Packaging is a crucial problem of e-commerce" – II 8*

Waste generated by packaging is another severe problem. Each sector of e-commerce struggles with responding to sustainability threats caused by packages. SEEs' implement different strategies to lower the negative impact of packaging. Most IIs claim to select reusable packages to lower their carbon footprint. GI 3, a Founder of SEE FMCG, suggested a fascinating solution to the problem: package-less delivery. His company delivers FMCG products without packages, significantly lowering SEE's carbon footprint.

> *Companies still want to make money, and they want to sell more, which is already unsustainable. German customers are one of the most spoiled in Europe. Customers receive the products ordered, like five pieces, try them on, and send them back. The German returns rate is the highest in Europe. You can do almost nothing against it, especially if you are selling marketplaces because you have to stick to the rules of big companies' rules. – GI 2*

Returns are especially problematic for the fashion industry. In order to compete with big players, e.g., Zalando (Germany) or Flipkart (India), micro and small SEE have to introduce free return service, which encourages both additional packages and CO_2 emission generated by the product returns. The e-commerce fashion industry puts much effort into promoting sustainable materials for the offered clothes and reducing waste generated in clothes or food production. The general pattern provided by SEE is diminishing the need for work travel. All the SEEs work remotely or in hybrid mode.

> *"E-commerce helps a lot in terms of helping women start their businesses. (…) The Internet is generally enabling many women in India to take the path of entrepreneurship" – II 10*

One of the IIs has emphasized the opportunity e-commerce offers to promote gender equality. They have highlighted the Internet as a tool to equalize people regarding their physical appearance, physical skills, and the diminishing impact of the glass ceiling for women to enter the market and participate in online gaming competitions. According to the interviewee, e-commerce is especially needed in developing countries where the position of women prevents them from fully participating in business and professional life.

Interviewees were asked to rank the SDG categories which benefit the most from SEE activities now and in the future. Each interviewee could rank each category from 1-3. Thus, the numbers in the section *Current* represent (a) #1 – benefits the most from the SEE, (b) #2 – mediocre benefit from the SEE, and (c) #3 – benefits the least from SEE. While the numbers in the section *Future* represent (a) #1 benefits the most from the SEE, (b) #2 mediocre benefit from the SEE, (c) #3 benefits the least from SEE (See Table 2).

Table 2. Effect of SEE impact on SDG categories based on the SDG Stockholm wedding cake implementation according to GIs and IIs expressed in the numbers of chosen SDG categories. The current and future perspective on the phenomenon.

	Current						**Future**					
	#1		**#2**		**#3**		**#1**		**#2**		**#3**	
	Germany	**India**	**Germany**	**India**	**Germany**	**India**	**Germany**	**India**	**Germany**	**India**	**Germany**	**India**
Economy	2	6	4	4	3	0	4	5	2	5	3	0
Society	6	4	1	6	2	0	5	5	3	5	1	0
Biosphere	1	0	4	0	4	10	0	0	4	0	5	10

GIs are generally more focused on ecology as the socio-economic situation is relatively stable, and there is no need for specific actions to balance it. Contrary to the GIs, IIs present a more pragmatic economy-focus perspective. The results of IIs responses present a fascinating case of Maslow's hierarchy of needs (Mcleod, 2007). According to their perspective, Indians must fulfill their fundamental needs, including financial security and physical well-being, before prioritizing ecological objectives.

Figure 1 presents the analysis of the current effect of SEEs' on SDGs from the perspective of GIs and IIs. The frequency related to selected SDG codes correlates with interviewee groups. Thus, it is possible to notice the difference in the current SDG focus between IIs and GIs. Similarly to the Stockholm SDG wedding cake categories, GIs have a much stronger focus on the biosphere. In contrast, IIs focus more on the economic and social problems reflected in their environment. The comprehensive breakdown of codes has been included in Appendix 3 for reference.

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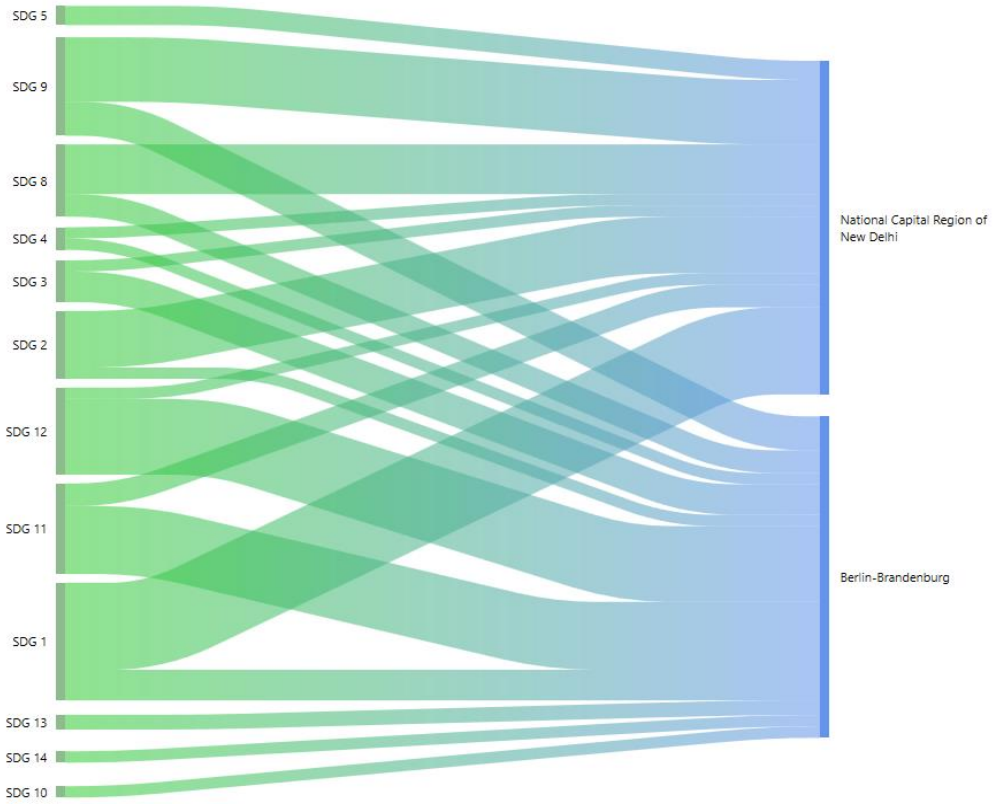

Figure 1. Visual Representation of SEEs' Impact on Selected SDGs: A Comparison between India (NCR) and Germany (BB).

Discussion

The IIs and GIs differ in their perception of SEE's current impact on SDG implementation. GIs are relatively balanced between the three SDG categories. Most of the GIs emphasize their SEEs' impact on the chosen SDG 11 and SDG 12 (See Figure 1), which belong respectively to the society and economy categories. In opposite to the GIs, IIs focus on SDG 1, emphasizing at the same time the urgent need to develop support for SDG 2 implementation. Both SDGs 1 and 2 are closely related, as they both reflect the problems of developing countries (Workie et al., 2020). In contrast to GIs, IIs do not see a biosphere benefiting from the SEEs' activities, not now nor in the future (See Table 2.). All IIs agree that the biosphere benefits the least from SEE at the current moment and will remain in its place in the future. IIs are divided between the ones who believe that SEE will primarily support the economy and those who see society as the primary beneficiary of SEE. According to the IIs, Indian customers prefer more affordable products over costly sustainable ones. Unlike German customers, Indians do not feel a need to pressure companies over unsustainable practices. According to one of the IIs, the approach of the Indian customers might change in the future due to the improvement of Indians' financial status.

Results obtained from the GIs show a contradiction in the answers. Biosphere as a category has been chosen once as the main beneficiary of SEE and four times took second place (See Table 2.).

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However, GIs rarely choose SDGs from the Biosphere category (See Figure 1). This phenomenon might be a result of relatively strong greenwashing among the GIs. Unlike Indian customers, German customers exercise significant power over companies by pushing them to implement sustainable (in most cases biosphere-related) practices. In the opinion of GIs, German customers expect SEEs to promote sustainability, but most of them will still choose cheaper products over more expensive sustainable ones. Results of the GIs' interviews show the hypocrisy of German customers' choice of sustainable products and their double standards. A very vivid example of the German customers' contradiction in their behavior is their expectation for free returns provided by the SEE (especially related to the fashion SEE branch) while simultaneously demanding higher sustainability measures from SEE.

The vast majority of interviewees agreed that SEEs have the potential to facilitate the implementation of SDGs in both emerging and developed regions following a consistent global pattern rather than adapting to local requirements. All the GIs acknowledged the existence of a universal global pattern in SEE's influence on SDGs. In contrast, only 60% of the IIs agreed with this assertion. IIs who perceive SEE from a local perspective emphasize the unique circumstances of their respective regions. They contend that SEE should be customized to address local needs while still relying on universally applicable global solutions.

Conclusion

This study contributes to the Theory of Sustainable Development (Harrington, 2016) and the MSTM (Starik & Kanashiro, 2020). It provides empirical evidence of SEE's impact on improving sustainability. According to the study results, SEE has the potential to support the implementation of SDGs, thus helping to compromise economic development and well-being with the responsible consumption of goods. Based on the available knowledge, this study introduces an innovative approach to qualitative cross-country comparison, addressing a significant gap in the existing literature.

German and Indian SEEs differ regarding their perception of SEE's impact on SDG implementation. GIs emphasize their substantial impact on improving the biosphere, while IIs focus mainly on the socio-economic aspects of SDGs. IIs do not see the biosphere as the beneficiary of SEE, neither now nor in the future. IIs seem more pragmatic in their responses than GIs, who have an idealistic attitude towards SEE's impact on the biosphere. Based on the arguments mentioned above, the study accepts Hypothesis 1 and Hypothesis 3.

The consensus among all GIs and a majority of IIs (precisely six out of 10) is that e-commerce represents a global phenomenon that incorporates universal patterns to accelerate the worldwide implementation of SDGs. According to the majority of interviewees, the global scale of e-commerce and growing Internet accessibility are pivotal factors in fostering globalization. Nevertheless, four IIs stated that e-commerce should be evaluated from the local perspective, expressing the need for SDG implementation strategy to the local circumstances. According to the four IIs, it is complex and inefficient to implement the same practices in developed and developing regions. In light of the study results in favor of SEEs' eligibility for setting global patterns on SDGs implementation, hypothesis 2 is deemed valid.

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A scientific comparison of the German and Indian SEEs' impact on SDGs implementation holds significant importance for several reasons. At first, the research helps to understand the strong and weak points in the sustainability policy of SEEs from two substantially different regions. Comprehending differences in SDG implementation shows the direction of sustainable policy planning and opens a platform for discussion, and potential collaboration between German and Indian SEEs and other institutions responsible for implementing SDG. Through such collaboration, participants may mutually benefit from each other's experience by identifying and adopting the best practices.

Limitations and Further Research

Interviews conducted by this study have been undertaken via the Zoom platform, which to a tremendous extent, limited behavior observation of the interviewees during the interview. Some interviewees had to pause due to Internet shortages or other technical problems that caused information loss in the scripting process. Thus, for future studies, conducting the interviews in person is recommended. The sample size used in this study is limited, which may impact the generalizability of the findings. It is suggested that future studies adjust the selection criteria to accept more participants. To collect more samples for comparison, future studies may implement the quantitative approach.

It is recommended to continue interviewing SEE from different regions of India to draw the pattern line between them. Comparison of regions within one country would be the first step to confirm hypothesis two related to SEE's global (not local) impact. Another aspect to be researched is the impact of greenwashing on the SEEs in developed countries. This study should show the comparison of the actual effect of the SEEs on sustainability with the comparison to their claims. A fascinating aspect of the research would be the analysis of customers' behavior from developed countries, as the study reveals the inconsistency between their choice of products and sustainability demands. This study's results revealed an interesting context of Maslow's hierarchy of needs (Mcleod, 2007). Suggestions for future research would be to identify the fundamental needs of the Indian society that must be met to redirect their focus toward ecological sustainability.

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Appendix 1. Sustainable Development Goals (SDGs) (UNDP, 2023b)

SDG number	Name of the SDG	Description
1	No Poverty	*End poverty in all its forms everywhere (UNDP, 2023c).*
2	Zero Hunger	*End hunger, achieve food security and improved nutrition and promote sustainable agriculture (UNDP, 2023c)*
3	Good Health and Well-being	*Ensure healthy lives and promote well-being for all at all ages (UNDP, 2023c).*
4	Quality Education	*Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (UNDP, 2023c).*
5	Gender Equality	*Achieve gender equality and empower all women and girls (UNDP, 2023c).*
6	Clean Water and Sanitation	*Ensure availability and sustainable management of water and sanitation for all (UNDP, 2023c).*
7	Affordable and Clean Energy	*Ensure access to affordable, reliable, sustainable and modern energy for all (UNDP, 2023c).*
8	Decent Work and Economic Growth	*Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (UNDP, 2023c).*
9	Industry, Innovation, and Infrastructure	*Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (UNDP, 2023c).*
10	Reduced Inequality	*Reduce inequality within and among countries (UNDP, 2023c).*
11	Sustainable Cities and Communities	*Make cities and human settlements inclusive, safe, resilient and sustainable (UNDP, 2023c).*
12	Responsible Consumption and Production	*Ensure sustainable consumption and production patterns (UNDP, 2023c).*
13	Climate Action	*Take urgent action to combat climate change and its impacts (UNDP, 2023c).*
14	Life Below Water	*Conserve and sustainably use the oceans, seas and marine resources for sustainable development (UNDP, 2023c).*

DOI: https://doi.org/10.36965/OJAKM.2023.11(1)30-49

Accepting Editor: Meir Russ

15	Life on Land	*Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (UNDP, 2023c).*
16	Peace and Justice Strong Institutions	*Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (UNDP, 2023c).*
17	Partnerships to achieve the goal	*Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development (UNDP, 2023c).*

Appendix 2. Interview Guideline

Introduction (2 min)	Hello, my name is Tomasz Waliczko. I am a Doctoral Candidate at the Technical University of Berlin. I research e-commerce entrepreneurship and its impact on implementing Sustainable Development Goals (SDG). Your participation is voluntary and may be discontinued at any moment during the interview. You may also decline to answer any questions during this interview. The interview will be recorded. Recording of the interview will be kept confidential in a safe place and used only for research purposes. All the details that would allow your personal identification will be removed. Recordings and transcripts will be destroyed at the end of the study once the results of the study are published. Do you have any questions about the study?
Personal affiliation to the company and personal relation to the e-commerce entrepreneurship (1 min)	1. Could you please share with me your company's position? 2. How are you involved in the e-commerce processes in the company?

DOI: https://doi.org/10.36965/OJAKM.2023.11(1)30-49

Accepting Editor: Meir Russ

Company's business profile (4 min)	3. Could you please tell me what is the company's business profile (e.g., What kind of products/services you are offering) 4. Did the company undertake digitalization processes, and how did it change the company's impact on the SDGs' implementation?
E-commerce and sustainability (10 min)	5. What elements of sustainable e-commerce entrepreneurship does the company implement? 6. How do e-commerce solutions utilized in your company support the implementation of SDGs? 7. Is there a direct link between e-commerce and the implementation of the SDGs?
Future of e-commerce as a tool to implement SDG (10 min)	8. What is the current direction of e-commerce in terms of SDG implementation? 9. Which future e-commerce solutions may you use to improve your company's sustainability? 10. Does e-commerce have the potential to provide economic, social, and environmental sustainability on a global scale? 11. Which one of three categories (economic, social, or biosphere) is most likely to benefit the most from e-commerce technologies development? Please rank those SDG categories – #1 benefits the most from the sustainable e-commerce entrepreneurship, #2 mediocre benefits from the sustainable e-commerce entrepreneurship, and #3 benefits the least from sustainable e-commerce entrepreneurship. 12. Which category of SDG may benefit the most from e-commerce solutions in the future? Please rank those SDG categories – #1 will benefit the most from the sustainable e-commerce entrepreneurship in the future, #2 will mediocrely benefit from the sustainable e-commerce entrepreneurship in the future, and #3 will benefit the least from sustainable e-commerce entrepreneurship in the future.

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Accepting Editor: Meir Russ

Additional comments (3 min)	13. Do you have any additional comments you would like to share with me?
Definitions	• Sustainable e-commerce entrepreneurship is a process of discovery, creation, and exploitation of profitable opportunities for buying, selling, transferring, or exchanging products, services, and/or information within the frames of the Internet or Intranet with a focus on the advancement of Sustainable Development Goals. • The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.
Supportive material	• For a better understanding of SDGs, please visit the UNDP • Link: https://www.undp.org/sustainable-development-goals?gclid=CjwKCAjwl6OiBhA2EiwAuUwWZQZ-Gq3KspB1RceVgfY_3x5ZcHJY2-kJYcmMn72deKsjl53oR1KdeBoC8u0QavD_BwE • For a better understanding of the Stockholm SDG wedding cake, please visit: • Link: https://www.stockholmresilience.org/research/research-news/2016-06-14-the-sdgs-wedding-cake.html

Appendix 3. Distribution of Code Frequencies Categorized by SDGs for Interviews in Berlin-Brandenburg and National Capital Region of New Delhi

SDG Number	Name of SDG	Berlin-Brandenburg	National Capital Region of New Delhi
1	No Poverty	8	23
2	Zero Hunger	3	15
3	Good Health and Well-Being	7	3
4	Quality Education	3	3
5	Gender Equality	0	5
6	Clean Water and Sanitation	0	0
7	Affordable and Clean Energy	0	0
8	Decent Work and Economic Growth	6	13
9	Industry, Innovation, and Infrastructure	9	17
10	Reduced Inequalities	3	0
11	Sustainable Cities and Communities	18	6
12	Responsible Consumption and Production	20	3
13	Climate Action	4	0
14	Life Below Water	3	0
15	Life on Land	0	0
16	Peace, Justice and Strong Institutions	0	0
17	Partnerships for the Goals	0	0

Author Biography

Tomasz Waliczko is a Doctoral Candidate at the Technical University of Berlin, specializing in Entrepreneurship and Innovation Management. He holds a Double Master of Science in Innovation Management, Entrepreneurship, and Sustainability (IMES). Tomasz's academic achievements and multidisciplinary approach demonstrate his commitment to addressing global challenges with an entrepreneurial mindset. In his research, Tomasz focuses on the implementation of Sustainable Development Goals by E-commerce Startups. He has several years of professional experience in international relationships, business development, and consulting. Tomasz was a volunteer at the Brazilian NGO “Vovo Chiquinho” in the city of Vitoria (Espirito Santo), where he was involved in helping the local community.

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