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CORPORATE CONTRIBUTION FOR SUSTAINABLE DEVELOPMENT: A CASE FROM A MANUFACTURING SECTOR ORGANISATION IN SRI LANKA

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Abstract: With an understanding of the need for sustainable development, which emphasises balanced economic, environmental, and social growth, the Sustainable Development Goals (SDGs) were introduced by the UN in 2015, and all member nations formally agreed to achieve them by 2030. Consequently, public and private enterprises in UN member states throughout the world place a high priority on sustainable development initiatives in their business agendas. The purpose of this study is to investigate how Sri Lankan corporate entities contribute to sustainable development (SD) using Siam City Cement (Lanka) Limited, formally known as INSEE, as a case study. In this study, interpretivism served as the research philosophy. The case study technique was employed as the research methodology. Data was gathered through interviews, field trips, observation, and document reviews. The data analysis method employed was thematic analysis based on Triple Bottom Line (TBL).

The study shows that the operations of INSEE create a number of environmental and social problems as it operates in the cement manufacturing industry. However, the company was able to address these problems by reducing its CO2 emissions, air pollution, and use of non-renewable energy; balancing biodiversity in affected areas; and implementing many community development projects for the benefit of society while effectively contributing to economic sustainability through contributing to GDP, paying taxes, and creating job opportunities, while effectively aiming to accomplish the SDGs by 2030. The study comes to the final conclusion that INSEE plays an industry role model in formulating and implementing its strategies towards the achievement of the SDGs by 2030.

Keywords: Sustainable Development, Sustainable Development Goals, Triple Bottom Line, Stakeholder Theory

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1. INTRODUCTION

1.1. Background of the study

One of the key elements for an organization's success is sustainable development (SD), which corporate entities achieve by implementing sustainability principles and changing business operations in a way that balances the environmental, social, and economic impact of them (Schaltegger *et al.*, 2017). Consequently, SD currently plays a bigger role in the corporate agenda globally. Although, no country has currently reached SD, and some nations remain far from the goals the UN expects to have accomplished these 17 sustainable development goals by 2030 (Holden *et al.*, 2014). So, at present, corporate managers' roles are challenging, as they have to work to balance the environmental (plant), social (people), and economic (profit) impacts of business operations. Assessing the corporate contribution to SD has become a popular research topic among many academic researchers, particularly in developed countries, during the last decade (Royo *et al.*, 2020; Omri & Mabrouk, 2020; Adenle, 2020; Qureshi *et al.*, 2019).

At present, the corporate sector in Sri Lanka plays a vital role in the economy while significantly contributing to the SD in different aspects and capacities (Thabrew, 2017). Despite the limited number of sustainability focus studies in the Sri Lankan context, they are unable to highlight the corporate contribution towards sustainable development since the majority of those studies primarily concentrate on CSR and SD disclosure (Fernando *et al.*, 2015). Further, they have stated that even major corporate entities mainly focus on marketing or image-building based on social and environmental initiatives. However, according to Yong & Fie (2016), about 60% of the top business entities in Sri Lanka engaged in CSR initiatives that were effectively beneficial to SD. Although Rajapaksha (2017) emphasised the benefits of employing sustainability practises into business agendas based on a single company case study, its breadth is insufficient to draw a concrete conclusion on the corporate contribution to SD in Sri Lanka. Research on the role of the corporate sector in Sri Lanka's SD is scarce, and the research that is accessible is short on its treatment of sustainability-related issues. Since Sri Lanka, a UN member, is in charge of reaching the SDGs by 2030, academics are encouraged to conduct this study to evaluate the macro- and micro-level company contribution to the SD.

1.2. Objectives of the study

Examining how Sri Lanka's corporate sector helps the country achieve sustainable development is the study's principal goal. In addition, the study aims to:

1. Identify the key actions of the chosen organisation to support national sustainable development.
2. Examine how these activities help to create sustainable development at the macro and micro levels.
3. Look at how these programmes help to accomplish the UN's sustainable development goals.

2. LITERATURE REVIEW

2.1. Sustainable development

The physical environment has been negatively impacted by improving human activities, rising populations, industrialization, and corporate expansion in the form of natural disasters, rising pollution, climate changes, global warming, and the survival of society and future generations (Klarin, 2018). In order to achieve balanced development, which is aligned with socioeconomic and environmental growth, SD is currently a requirement on a worldwide scale.

Despite the fact that there are numerous definitions of SD, it is generally agreed upon that SD is "the development that fulfils the demands of the present without sacrificing the potential of future generations to satisfy their own requirements," as stated by the Brundtland Commission (Emas, 2015). According to Murray *et al.* (2010), Smith and Shaicz defined sustainability as the organization's capacity to conduct a sustainable commercial operation in a way that is either voluntary or governed by the law without adversely affecting the social or natural system. It is difficult to achieve SD goals since they must adhere to the three pillars of the economic, social, and environmental spheres (Ishak & Ishak, 2017). According to Sachs (2010), sustainability and development are impossible without SD. In this regard, SD is a popular subject on business agendas all across the world. To combat the negative environmental and social effects of human activity while achieving SD, corporations have launched a variety of initiatives and programmes (Adams & Frost, 2008).

In particular, the UN has declared an SD agenda to reduce the harmful effects of human activity on the environment. Organizations are therefore urged to adapt SD practices to their corporate goals and policies (Davis & Searcy, 2010). The corporate sector, society, and the environment can all benefit from the use of such methods in business. According to the "green" idea, by reducing resource use and waste, it may be possible to lower operating expenses while still maximising revenue and profits.

2.2. Global concern on sustainable development

In order to achieve sustainable development, the United Nations, the European Union, and top corporate organisations have taken a variety of measures, including raising public awareness through conferences, publications, and the establishment of social and environmental standards and norms. In order to raise member nations' awareness and persuade their corporations to mitigate environmental problems, the UN plays one of the most important roles in this regard by organising various programmes, such as summits and international conferences, the outcomes of which are agreements, conventions, declarations, and reports (Klarin, 2018). Furthermore, the United Nations Division for Sustainable Development (UNDSD) established the Millennium Development Goals and organised a number of communication, information, and data transformation activities.

The Millennium Development Goals (MDGs), which include eight sustainable goals including maternal and child health, equality of people, poverty, universal access to education, the fight against HIV/AIDS, environmental sustainability, and global collaboration, were introduced by UN authorities in 2000. Later, the United Nations (UN) proposed 17 Sustainable Development Goals (SDGs) at the Paris Conference on Climate Change in 2105 with the intention of achieving and strengthening the border areas of equality, healthy living, poverty, famine, and sustainable energy (Klarin, 2018; Thabrew, 2017). The UN Secretary-General stated when introducing the SDGs that private public partnerships (PPPs) were essential for the effective implementation of the SDGs as well as to achieve the potential benefits of $12 trillion in new corporate ventures around the world and the creation of 380 million jobs by 2030.

Achievement of SDGs and the global ranking of selected countries by 2020 is shown in figure 1:

Country	*Global Ranking*	*Level of SDG achievements*
Sweden	1	
Denmark	2	
Finland	3	
United Kingdom	13	

Country	*Global Ranking*	*Level of SDG achievements*
New Zealand	16	
Japan	17	
Canada	21	
United States	31	
Australia	37	
China	48	
Malaysia	60	
UAE	71	
Oman	76	
Panama	81	
Singapore	93	
Sri Lanka	94	
Qatar	103	
India	117	
Pakistan	134	
Haiti	154	

Figure 1

Source: Sustainability Development Report (2020)

2.3. Triple bottom line (TBL) and sustainable development

Elkington first proposed the "triple bottom line" (TBL) in the mid-1990s, and it aims to maintain harmony between the three fundamental pillars of economic, social, and environmental sustainability (Hammer & Pivo,

2017). To achieve long-term sustainability and maintain the organization's operations in a balanced manner, the notion of these three components in the sense of an organisation must be measured by the bottom line for each pillar (Carrick, 2012). Environmental sustainability, according to Klarin (2018), is the business effort to improve human well-being by safeguarding natural resources, which primarily include minerals, air, water, land, and the complete ecological system. It focuses on how the company operates while safeguarding the natural environment and upholding the ecological balance that is necessary for preserving the planet and society.

In order to create a fundamental framework for society, social sustainability emphasises corporate contribution and investment in social capital development. In order to further ensure equality, fair labour practises, human rights, moral work, and product responsibility, as well as to improve people's quality of life and contribute to community development, etc., economic sustainability is necessary in order to maintain and regulate continuous capital and generate a reasonable return. Therefore, businesses must contribute to economic development by generating employment opportunities, increasing GDP, enhancing value for money, etc.

2.4. Corporate contribution to sustainable development goals

It has been realised that corporate investment and contribution are more important to achieving sustainable economic development. The rapid depletion of natural resources, particularly those related to the forest, water, and energy; the unsustainable use of resources; the rise in global warming; the production of waste and toxic materials; urbanisation; and other issues are posing serious challenges to society as a whole at the moment (Glenn & Gordon, 2002). Understanding the effects of these environmental, social, and economic issues, the United Nations (UN) adopted 17 Sustainable Development Goals in 2015 that must be met by all of its member countries by the year 2030. Therefore, the majority of countries are collectively attempting to prevent harmful social and environmental concerns from their operations while supporting SD, regardless of ownership structure, sector, size, legality, or location (Organisation for Economic Co-operation and Development, 2017). Business executives are aware of the gravity and complexity of these issues, as well as their role in reducing their negative effects on the environment and society. The level of a corporation's social responsibility determines the extent of their contribution to SD. The corporate community focused heavily on resolving existing environmental and social issues once the SD concept became a part of the business agenda by incorporating sustainability strategies into their corporate goals.

The UN has urged both public and private institutions to include SD practises in their business strategies because the corporate sector, the environment, the economy, and society will all benefit from such practices. The business sector is the primary stakeholder in tackling such sustainability challenges. Additionally, according to the literature, all organisations now use the term "sustainability" to signify their dedication to maintaining the environment, economy, and society since it became popular in 1987 (Ishak & Ishak, 2017). Parallel to that, corporate organisations will be able to acquire competitive advantages through low-cost operations that reduce resource consumption, additional revenue from green products, increased market share due to consumer loyalty and reputation, avoidance of environmental penalties, etc. Therefore, businesses that embrace sustainable practises are more competitively advantageous and stronger in the market. A business reputation for environmental responsibility has developed into an important aim for many corporate entities nowadays, according to Kolk's (2016) construction.

Business managers, however, face a significant problem in balancing the effects on the economy, the environment, and society. However, after realising the value of SD, almost all public and private organisations around the world now make significant contributions to a variety of areas, including maintaining an appealing return on investment, increasing the economic value of their products, providing value for the money, adhering to and maintaining acceptable labour regulations, promoting community development, and protecting the environment by reducing pollution and carbon emissions. Gunawan *et al*. (2020) and Van der Waal and Thijssens (2020) have stated that, with an understanding of the need to achieve the 17 Sustainable Development Goals (SDGs), businesses play a pivotal role in managing raw material consumption, using human resources, and undertaking activities that greatly impact health and safety, social wellness, and environmental protection. However, their concrete contribution to achieving the SDGs cannot be assumed. Firms should embark on a radical shift in their commercial and business priorities, incorporating SDGs into their long-term goals and strategies (Santos & Silva Bastos, 2020). In addition, corporate business models should be aligned with the multiple layers of SDGs in terms of environmental, social, and human rights ambitions (Izzo *et al*., 2020).

2.5. Sri Lanka moving towards SDGs

Sri Lanka, a UN member state, has taken a number of measures to achieve the SDGs by 2030, including passing the Sustainable Development Act No.

19 of 2017 to establish and carry out national policies via the Sustainable Development Council. At this time, Sri Lanka's corporate sector has also acknowledged its role and made contributions toward achieving SD. The Institute of Chartered Accountants honoured 130 corporate entities (of 287 listed corporations) in 2019 for their commitment to SD. It suggests that the corporate sector in Sri Lanka has made significant efforts and contributions towards achieving the SDGs.

Sri Lanka now ranks 94th out of 193 countries with an overall score of 66.9 and contributes an average amount to SD as a nation. Between 2002 and 2018, Sri Lanka succeeded in reducing the country's poverty rate from 13.2 percent to 0.27 percent (Cuaresma *et al.*, 2019). Additionally, the nation ranked 66th in the global food security index despite making significant strides in a number of areas, including free national education, welfare programmes, and health care (Financial Times, 2015). Additionally, the country's unemployment rate decreased from 8.76% in 2002 to 4.20% in 2019 (International Labour Organisation, 2020), demonstrating the country's strong labour market and job security. Corporate and governmental organisations have promoted women's employment while providing them with equal chances. Additionally, Sri Lanka has achieved all components of high-quality education; in 2018, 99.11% of kids between the ages of 5 and 11 and 98.4% of kids between the ages of 12 and 14 went to school (United Nations Educational, Scientific, and Cultural Organisation, (2020).

In the meantime, compared to other regions, free health services dramatically reduce newborn, child, and maternal mortality towards a very low range. Between 2000 and 2018, the neonatal mortality rate decreased from 9.60% (UNICEF, 2020) to 4.5%, while the mortality rate for children under the age of five decreased to 7.4%. Because of accessible, high-quality healthcare, the life expectancy for men is predicted to be 71.7 years in 2025, compared to 81.7 years for women. Additionally, Sri Lanka reported a relatively low rate of HIV infection in its population in 2018—0.01% (United Nations Children's Fund, 2020). Negligent driving caused 14.09% of traffic fatalities, compared to the global indicator's value of 3.2%.

2.6. Theoretical framework

Since Stakeholder Theory (ST) primarily focuses on maximising wealth and value creation for all stakeholders rather than maximising shareholder wealth, ST was used as the theoretical framework for this study. The term "stakeholder(s)" refers to a wide variety of people and organisations that keep a "critical eye" on

corporate activity (Harmoni, 2013). While Aly *et al.* (2019) noted the need for comprehending stakeholders' relationships and their demands and aspirations, Freeman (in 1984) highlighted the accountability of business entities to all stakeholders when he launched ST as a new business strategy and model. Carroll (1999) used the CSR pyramid to explore corporate social responsibility in terms of the four pillars of the economy, society, ethics, and philanthropy. As a result of extensive prior research, corporate entities have come to the conclusion that, in order to successfully do business in society, they must meet the expectations of all stakeholders and create value for their interests. It is referred to as "social responsibility" and suggests that corporate enterprises are responsible for the entire society. The "right and power" of stakeholders to be aware of how commercial organisations interact with society and use social resources has been extensively debated by ST. As a result, businesses today place equal emphasis on social and environmental development in addition to economic growth.

After the Triple Bottom Line (TBL) idea, which combines three broader economic, social, and environmental aspects, was created, primarily after 2000, corporate entities contributed considerably on a global scale (Hammer & Pivo, 2017). Since the primary goal of the study is to analyse corporate support for SD, the TBL notion, which was derived from ST, is also employed as part of the theoretical framework.

3. RESEARCH METHODOLOGY

3.1. Research site

The business chosen for this study, known as INSEE, was founded in 1969 and is a well-known manufacturer of cement in Southeast Asia. With a green label accreditation, this business is the leading producer of green cement in Sri Lanka. Until recently, the cement sector was thought to be the biggest source of environmental pollution. Nevertheless, this business has minimised environmental problems by putting policies into place while maximising processes and production. To meet consumer needs, INSEE runs its factory across the nation in three locations and five logistics and distribution hubs. Sri Lanka's Puttalam plant is a fully integrated manufacturing facility, while the Galle and Ruhuna plants are grinding facilities that supply the market with high-quality, freshly ground cement. The primary quarry site is near Aruwakkalu, while the head office is in Colombo. There are five logistical hubs located in Palliyagoda, Keleniya, Kurunagala, Trincomalee, and Colombo. The

business has built a strong reputation for itself across the nation and has more than 7,000 dealers in its distribution channel networks. Furthermore, one of the main focuses of the business is environmentally friendly trash management. More than 600,000 metric tonnes of industrial waste have been handled by the company Eco-Cycle and turned into power. As a socially conscious business in Sri Lanka, INSEE is committed to achieving SD by addressing all facets, including social, economic, and environmental concerns (Sustainability Report, 2018). The researcher believes that this corporation is the perfect case to study how it contributes to SD handling such difficulties because its operations have significant environmental and social issues.

3.2. Research design

In this study, interpretivism was chosen as the research philosophy and inductive methodology. The majority of research inquiries focus on "why" and "how" issues. Since the primary goal of the study is to explain how Sri Lankan corporate entities contribute to sustainable development, using a leading manufacturing company as a case study, the research technique used in this study is explanatory in nature.

3.3. Data collection and analysis

The main methods used to gather primary data were in-depth interviews, observations, and field trips. Nine important organisational members whose jobs are highly sensitive to causing environmental difficulties and who hold the highest position in the company's decision-making hierarchy were interviewed in total. They are the Puttlam plant's plant manager, environment and CSR manager, process performance engineer, health and safety and administrative manager, site manager of the Arruakkalu mining site, site manager of the Katunayaka eco-cycle plant, logistic operations manager of the Peliyagoda warehouse, company communications and reputation manager, and system compliance manager in the Colombo office. Additionally, during the field visit to the Puttlam factory, the legitimacy and reliability of the information gathered through interviews were checked. We had the opportunity to see how the actual operation worked and how it affected the environment. The results were also supported by secondary data, which was gathered after a review of the company's website, manuals, and other internal records accessible at the plant site and the headquarters, as well as sustainability reports from the company and other businesses in the South Asian region. Only the managers at the Puttlam manufacturing location had

in-person interviews, since other managers were contacted via phone due to the ongoing COVID-19 outbreak.

All of the interview transcripts and in-depth notes were organised under the major themes that applied to this study the best. Since the goal of this study is to analyse corporate contributions to sustainable development, this contribution is designated as a global theme in Akinyode and Khan's (2018) classification, while economic, environmental, and social themes were designated as organising themes, and specific subthemes within each organising theme (for instance, elements of environmental sustainability such as waste management, carbon emission control, and power consumption) were designated as basic themes. With the aid of the theoretical framework put forth in this study, these themes were thoroughly examined in order to reach a relevant conclusion concerning Sri Lankan business organisations' contributions to sustainable development.

4. DATA PRESENTATIONS

4.1. Sustainability concern of INSEE

The process of cement manufacturing typically leads to numerous environmental and social problems. INSEE has developed its procedures in accordance with four main green concepts of sustainable operations in order to minimise environmental and social problems while advancing SD. These concepts are: high-quality products with a low carbon footprint; sustainable construction with low social cost and process; and production with green mark certification (INSEE sustainability report, 2018). The company's vision about SD is evident from the plant manager's view.

> *"Our effort is to minimise the negative impact of our activities on the environment, facilitate underprivileged people in our operation areas, and contribute to the economic development of the country by adding value to local resources, strengthening local supplies, and contributing to macro-level economic development."*

4.2. Economic sustainability

As a responsible corporate citizen, every corporate entity needs to contribute to the economic development of the country in which it operates. As the plant manager stated,

> *"Our company has significantly contributed to the economic development of the country by paying taxes, investing in infrastructure development, providing employment opportunities, and adding value to the GDP of the country."*

According to INSEE's 2018 Sustainability Report, the company paid the government Rs. 2,214 million (Mn) in import taxes despite investing Rs. 2,199 million in the nation's infrastructure through the expansion of its production and eco-cycle capacities, as well as by funding national development initiatives. About 650 full-time jobs and 1,100 contract positions have been offered by the company, and its CSR initiatives have also generated more than 1,000 indirect job opportunities and benefited more than 3,500 people financially.

Direct economic contribution of INSEE for SD in the year 2018 is summarised as shown in Table 1.

Table 1: Direct Economic Contribution (Rs. Mn.)

Economic value generated - Revenue	30,585
Economic value distributed	
Operating costs	25,025
Employee wages and benefits	2,306
Payments to Government	2,214
Project Expansion	2,199
Community investments	12
Environmental investments	42
Dividends/Capital cost	1877

Source: INSEE Sustainability Report, (2018)

4.3. Environmental sustainability

Communities and corporate entities are intertwined. Community development is thus one of the other SoS components (Kochhar, 2014). Many corporate firms engage in social welfare-related community development activities as part of their philanthropic responsibilities (Moyeen & West, 2014). According to the report, INSEE has defined its social duty in terms of community development because the business heavily relies on regional resources in its operational locations. As shown in Section 4.3 above, the corporation has undertaken numerous historic endeavours to assist the neighbourhood. When similar companies in the area are evaluated for their community development efforts, it is found that they perform comparable tasks at various levels, depending on their operating scales.

4.3.1. Environmental compliances

As the System Compliance Manager of INSEE stated:

> *"We need to get two Environmental Protection Licence (EPL) certificates." one from the Central Environmental Authority (CEA) of Sri Lanka and*

another one from the Environmental Authority of the north western province. In addition to that, quarry site operations should comply with the prescribed guidelines of the lease agreement with the government. "But our present operation practises are much better than the minimum legal requirements as we voluntarily do many environment-friendly activities."

This aspect has further documented in INSEE sustainability report 2018 as;

"Our plants' operations have fully complied with all regulatory requirements applicable to the cement industry, including the National Environmental Act and other specific covenants; adopted globally accepted best practices for the benefit of a wider range of communities; implemented BASEL conservation on hazardous waste and disposal; and conducted annual audits as part of the ISO 14001 EMS and ISO 50001 EMS."

The plant manager mentioned:

"We exercise a zero-tolerance approach towards non-compliance with all laws, rules, and regulations, including those pertaining to anti-competitive behaviour." To ensure 100% compliance in all relevant economic, social, and environmental areas, we have in place an integrated Plan-Do-Check-Act cycle. Meanwhile, we have appointed compliance champions at the site level. As part of their duties, they are required to seek employee input for the formulation of policies and the effective implementation of compliance programmes for quality, environmental, occupational health and safety, and energy programmes in their line of work.

The compliance track record of the INSEE for the year 2018 is shown in Table 2.

Table 2: The compliance track record of the INSEE for the year 2018

incidents of non-compliance regarding anticompetitive behaviour and violations of antitrust and monopoly legislation	Zero
Incidents of non-compliance with regulations and/or voluntary codes concerning product and service information and labeling	Zero
Significant fines and non-monetary sanctions for non-compliance with laws and regulations in the social and economic area	None
Significant fines and non-monetary sanctions for non-compliance with environmental laws and regulations	None

Source: INSEE Sustainability Report (2018)

4.3.2. CO_2 emission control

Since INSEE has an utmost concern about how to reduce global warming, it has taken several steps, such as upgrading combustion equipment, reducing

limestone contents, using substitute material, introducing sophisticated monitoring systems, etc. over the last few years (INSEE Sustainability Report, 2018).

As the Process Performance Engineer said,

> *"As we realised that the limestone content of our product was higher than that of international standards, we reduced it to that level." "Consequently, we were able to reduce CO2 emissions at the burning stage of limestone, which leads to reduced global warming."*

Further, he added:

> *"We have reduced coal consumption by 34% and use alternative fuels such as biomass, garment waste, and seed materials (paddy husk), while clinker is replaced with mineral components like dolomite, unburned limestone, and fly ash. As a result, now we operate with less* CO_2 *emission, i.e., 573 kg* **CO2/** *tonne of cement, which is the lowest level at the industry in the southern region".*

The logistic operations manager said:

> *"At present, wholesale customers can buy from our regional warehouses since we transport production from plant sites to regional warehouses using heavy vehicles that carry bulky loads at a time. So number of vehicles come to plant site can be minimised. "Consequently, we indirectly contribute to reducing fuel consumption and* CO_2 *in our distribution channel."*

4.3.3. Sustainable power consumption

An industry that uses a lot of energy is the cement sector. The Puttalam plant's kiln, which needs to be over 1450 °C to generate clinker, primarily uses coal, while the grinding and mixing processes primarily use electricity. In 2018, the Puttalam plant and the Ruhuna cement factories used 125,434,477 KWh of power. Therefore, the corporation has started a number of initiatives to lower power and energy use as well as CO2 emissions.

As the Process Performance Engineer commented:

> *"We took several steps towards reducing the dependency on fossil fuels, especially coal. So, we have begun researching the use of greener fuels, i.e., biofuel. We have a separate business unit for Eco Cycle that entirely focuses on waste management, and we take waste from many industries and paddy husk from rice mills, disposing of them through our kiln. The facility currently meets approximately 34% of the energy requirements of the Puttalam cement plant*

kiln. "Our target is to increase the alternative fuel mix up to 45% within the next few years."

The INSEE sustainability report (2018) shows the percentage that the company has reduced energy consumption over the years, as shown in Table 3.

Table 3: Energy Savings Records

	2008	*2018*	*Saving*	
Specific Thermal Energy Consumption(STEC)	3860	3789	-71	MJ/t Clinker
Specific Electrical Energy Consumption (SEEC)	105.35	94.3	-11.1	KWh/t Cement
TSR% Thermal Substitution Rate	22.36%	33.94%	11.60%	

4.3.4. Sustainable water consumption

As INSEE has remained conscious of water efficiency in the areas of its plant operations, the company's water resource management efforts mainly focus on the careful use of water resources, developing infrastructure for rainwater harvesting, and investing in the effluent treatment plant (INSEE Sustainability Report, 2018).

On this, the environmental and CSR manager said:

"We have improved our production process to reduce water consumption, recycle, reuse, and harvest rainwater."" As a policy, our plants do not discharge wastewater to the ground, and all water used in our operations is treated in sewage or effluent treatment plants." Additionally, we have installed a water recycling unit and a rainwater harvesting system at this plant site."

In 2018, its total water consumption was 97,843 cubic metres (m3), of which 80,770 m3 (82.6%) were withdrawn from deep wells at the plant site, 12,274 m3 (12.7%) were purchased from municipal supplies, 600 m3 (0.4%) from rainwater harvesting, and 4,200 m3 (4.3%) was recycled water (INSEE Sustainability report, 2018).

4.3.5. Circular economy- waste management

INSEE doesn't produce any waste because it works in the cement industry. But by gathering their garbage and using it to create the kiln's power needs, it offers the best solution to waste generated by the majority of other industries in the nation. The only organisation in Sri Lanka with a CEA licence for processing and transporting hazardous waste is INSEE.

The site manager eco- cycle plant at Katunayaka stated on this aspect as;

"*We collect about 250 metric tonnes of industrial waste per day at our Eco-Cycle waste pre-processing facility unit and shredding facility unit. Furthermore, we have signed agreements with 50 local government councils to take and dispose of their non-recyclable and non-degradable solid waste through our operating system.*

4.3.6. Air pollution control

In general, the cement manufacturing process primarily generates dust emissions, which may create many environmental problems such as air pollution and water pollution. So, INSEE has taken proactive approaches to ensure its processes operate with low dust emissions. As the environment and CSR manager commented,

"We have implemented several dust suppression initiatives to ensure they remain within the CEA's baseline standards. More recently, we have used filtering systems that absorb dust through bags. Also, we use a dry fogging system, road watering, covering, and closed yards to reduce the dust. Our filtering system runs as an air purifier, which filters up to 99.97% of airborne particles and helps effectively control and reduce dust emissions. Currently, the *plant site dust emission level is 1 mg per cubic metre, which is much better than its standard of 293 mg per cubic metre.*

As Plant Manager said,

"In every year, a company plants 1,000 trees like a belt called a "green belt" to control dusty wind flow."

4.3.7. Environmental conservation

INSEE is committed to environmental conservation in all aspects of its operations. Its main environmental conservation initiatives are bio-diversity conservation, an animal rescue programme, coral reef restoration, and the restoration of degraded forest land.

With this regard, the system compliance manager said:

"All of our operations are conducted according to the national environmental regulations." So we have ensured that our entire operations, from manufacturing to dispatch, warehouse operations, and even general office operations, are carried out without causing any damage to the environment of the surrounding area. We extracted limestone in an environmentally compatible

> *and economical manner. Our quarry site is totally managed according to the national environmental regulations such as the National Environment Act and Flora and Fauna Ordinance, as well as the international best practise of the RAMSAR*

manager of the mining site at Arruakkalu, as stated on the site;

> *"After completion of mining, those areas are rehabilitated with the same layers of soil, restored plants, bushes, and flora, and the ecological system and aquatic habits such as artificial wetlands and salt marshes, etc. are maintained as they were before mining. Furthermore, it needs regularly maintain until growing up replanted forest".*

The 2018 sustainability report has stated that 665,000 m3 of total habitat have been protected and restored in the main quarry site, and under the animal rescue programme, over 12,000 animals have been rescued and relocated to date.

4.4. Social sustainability

Assessing social contribution for SD is another aspect of this study. INSEE's social sustainability has focused on three main pillars: strong partnerships with suppliers and customers; team building; and community development (sustainability report, 2018).

As the Communications and Reputation Manager stated:

> *"We continuously do research and development to introduce innovative products through our sustainable construction solution of value-added, eco-friendly, quality, strength, and durability products." Moreover, we train masons and educate building contractors about green building concepts. Further, we do environmental assessments of suppliers to ensure their supplies are in compliance with the requirements of our sustainability agenda.*

Health, Safety, and Administrative Manager stated;

> *"We have developed a safe work environment and provide safety equipment to all employees." No one can work without safety gear. "As a result of our Fatality Prevention Elements (FPE) procedures, no deaths or casualties have been reported during the last few years."*

With an average of 40 hours per employee, the company spent Rs. 46 million in 2018 on employee training programmes totaling 18,656 hours. Due to the fact that the majority of employees work in environments with heavy machinery, 23% of the total training hours were allotted for safety-related training.

The company's CSR programme extensively addresses social benefits and community development. Therefore, the corporation pays special attention to the interests of the locals in Puttalam, the Ruhuna plants, and the Aruwakkalu mining site. In recent years, INSEE has conducted a number of CSR programmes, allocating Rs. 61 million, or 0.79% of total revenue, for community development projects.

The environment and CSR manager mentioned that

> *"First, we initiate a community advisory panel consisting of internal and external stakeholders such as the district secretariat, the head of the police station, Grama Niladari, leaders of community-based societies, and an internal team including plant managers, environmental specialists, and a CSR manager. Additionally, we have initiated a proper community grievance handling mechanism at the company level.*

Furthermore, he explained,

> *"CSR projects that we implemented during the last few years are the Youth Vocational Training Programme, which is implemented by the Enterprise-Based Vocational Education (EVE) Training Centre of INECC and the National Apprentice and Industrial Training Authority (NAITA) of Sri Lanka. One other unique programme with the support of the Institute of Engineers Sri Lanka for youth is the "Concrete Challenge" programme for the final-year civil engineering students of the state universities of Sri Lanka.*

As he said, other community-based programmes are

> "Student support activities include *sponsoring subject teachers of several core subjects (mathematics, science, and English language), providing library facilities, conducting two pre-schools, providing free school van services for the children living in the village nearby Puttalam plant, a clean drinking water supply project for neighbouring schools, a campaign to prevent drug use among youth with the support of Galle and Puttalam police stations to prevent school children from using drugs and alcohol, and another new project, "One Child, One Tree." In the first phase, around 800 schoolchildren from 10 primary schools were selected and gifted one plant per student. Additionally, the company operates two medical centres that provide free consultation and prescribed medical drugs to the people of Eluwankulam and Puttalam twice a week*".

4.5. Alignment with Sustainable Development Goals (SDGs)

As a responsible corporate citizen, INSEE has made commendable efforts to achieve the UN SDGs. As the environment and CSR manager said,

"We have designed separate goals for each SDG to achieve a better and more sustainable future for all." "In each year, we measure their progress and level of contribution for each goal and report it."

The 2018 Sustainability Report gives comprehensive details about the company's initiatives and level of SDG achievements. It shows that, although the company has not fully achieved any SDGs, it has made significant efforts to achieve them.

Furthermore, he said,

"By recognising our contribution to sustainable development, we were awarded several times by different national and international organisations in 2018.

Those awards are summarised in Table 4.

Table 4: Awards and recognitions

Global Gold Winner of the Industry Category at the Green World Awards 2018 in Turkey
Presidential Environment Awards 2018 under the "Solid Waste Recovery, Recycling, Disposal, or Processing" Category by the Central Environmental Authority (CEA)
Responsible Care Awards 2018, under the Waste Management category, by the Responsible Care Council
Bronze award in recognition of the contribution to the green production process at the Puttalam Cement Plant by the CEA
Gold-Green Mark Certification by the Ceylon Institute of Builders (CIOB)
Puttalam Cement Plant won the Bronze Award in the Chemical Industry Sector at the "Presidential Environment Awards 2018."
Gold Award in the Large-Scale Manufacturing Sector of the National Level for Social Dialogue and Workplace Cooperation organised by the Ministry of Labour and Trade Union Relations.
recognised as the "Best Mining Company 2018" at the "Bhoo Abhimani Haritha Harasara Pranama Ulela" organised by the Geological Survey and Mines Bureau, Sri Lanka.

5. DISCUSSION AND ANALYSIS

5.1. Understanding social accountability

INSEE has participated in manufacturing activities that are environmentally friendly, mostly using natural resources like limestone, water, and non-renewable energy. As a result, it causes several social and environmental problems where it works. Business accountability, according to Freeman (1984) (quoted by Colvin & WittJustine), is to all stakeholders (2020). As INSEE employs local natural resources in the operational locations, the corporation is therefore substantially responsible to society, particularly the local community in nearby communities of quarry and plant sites. The significance of developing business strategies and carrying out operations to maximise value creation for all stakeholder

groups rather than to maximise the interests of economic stakeholders has been highlighted by Harmoni (2013) and Hörisch (2015).

Thus, INSEE has developed a wider network covering all possible stakeholders, including economic and social stakeholder groups, by conducting regular meetings with them as part of its business management model. As Carroll (1999) discussed, based on corporate social responsibility under the four pillars of economic, social, ethical, and philanthropic endeavors, the INSEE also largely contributes to macro- and micro-level economic development of the country (refer to Section 4.2) while contributing to social and community development and environmental protection in the areas in which it operates (refer to Sections 4.3 and 4.4), broadly identifying its economic and social stakeholders and their expectations while operating in a sustainable manner.

Business entities of UN member countries are urged to incorporate SD practises into their business agendas in order to enhance advantages to the environment, society, and the broader economy because the UN has proclaimed the SD agenda to minimise negative social and environmental repercussions of human activities (Dhahri & Omri, 2020). INSEE has presented its sustainability plan, together with the SD strategies and various economic, environmental, and socially responsible activities taken by the company, with greater clarity now that it has a stronger grasp of sustainability.

5.2. Contribution for economic sustainability (EcS)

EcS is important to SD since it encourages entrepreneurship to promote economic growth (Royo *et al.*, 2020). According to the TPL, EcS means keeping continuous capital by earning a fair return and contributing to economic development through, among other things, opening up job possibilities, increasing GDP, and improving value for money (Klarin, 2018). Economic participation at both the micro and macro levels is crucial for EcS (Thomas & Chindarker, 2019). As a responsible corporate entity, INSEE has generated an additional RS 30,585 million in economic value, as indicated in Table 1, and has implemented numerous other social projects, as described in 4.2.3, by investing RS 12 million in 2018. The company also paid local suppliers Rs. 14, 335 million, or 49% of its total purchases, from local sources. As a result, INSEE has commendably contributed to the country's EcS, much like other regional business entities like Lafarge Holcim and Ambuja Cement.

5.3. Contribution to Environmental Sustainability (EnS)

According to the TPL idea, by safeguarding natural resources, including minerals, air, water, land, and the entire ecological system, companies may

contribute to improving human wellbeing (Klarin, 2018). Other ways to improve EnS, which focuses on how businesses can operate while protecting the physical environment and maintaining an ecological balance, include reducing the use of non-renewable resources (Dhahri & Omri, 2020), reducing CO2 emissions and environmental pollution (Song *et al.*, 2019), and using green production processes to reduce ecological scarcity.

According to the study, INSEE maintains its position as a leader in environmental management, has ensured complete compliance in all pertinent environmental areas, and has properly structured environmental management systems in every area of its operations. The company also effectively contributes to the control of global warming by reducing CO2 emissions, providing sustainable solutions for non-renewable energy consumption, water consumption, waste management, and air pollution, and maintaining a high standard of environmental management throughout all aspects of its operations.

5.3.1. CO_2 emission control

To attain EnS, it's critical to reduce CO2 emissions and environmental contamination in all aspects (Song *et al.*, 2019). The production of cement is one of the most energy-intensive industrial sectors and a major source of CO2 emissions and air pollution (Morrow *et al.*, 2014). According to Arel (2016), the global cement industry released 5.1 billion metric tonnes of CO2 into the atmosphere in 2018, which had a substantial negative influence on the area's socioeconomic development (Ince, 2019). According to the findings of this study, INSEE is very concerned about lowering CO2 emissions from their manufacturing process. By substituting fly ash for the clinker, which produces the majority of the CO2, they were able to lower its composition by 78–80% without adding any additional CO2 to their operation. They currently operate with 573 kg CO2/ton of cement, the lowest level in the southern region's cement industry. It suggests that through lowering CO2 emissions from its operations, INSEE has made a significant contribution to limiting global warming.

5.3.2. Sustainable power consumption

Utilizing renewable energy sources could promote economic expansion and lower CO2 emissions (Mahmood *et al.*, 2019). In the meantime, Dhahri and Omri (2020) claim that switching to renewable energy sources is a practical method to attain ENS. According to a study, INSEE has been able to cut its use

of coal by 34% by employing alternative fuels like biomass, clothing waste, and seed materials. By 2022, the business aimed to boost the amount of alternative fuel in the mix to 50%. As a result, it will significantly lower the consumption of non-renewable energy. The contribution made by EnS through sustainable power use is shown in table 3.

5.3.3. Sustainable water consumption

Water scarcity will be a significant environmental issue in the future. Water security is one of the main SD components (United Nations, 2015). The worldwide water problem and the need for water security prompted the adoption of water security as a major international objective (Zhu & Chang, 2020). According to the environmental and CSR manager, INSEE has a clear understanding of water efficiency, which is also apparent from the sustainability report given that they recycle, reuse, and collect rainwater. The study's Section 4.3.4 and the sustainability report from 2018 both explain the company's efforts to increase water efficiency and implement sustainable water use strategies.

5.3.4. Circular economy: waste management

Every country faces a significant environmental burden due to the massive volume of solid waste that must be collected and treated (Seara-Paz *et al.*, 2016). Since the cement industry now relies on municipal solid waste (MSW) as a raw material substitution and a source of energy, it will offer the best answer to reducing the burden of solid waste (Carvalho *et al.*, 2017). According to the study's findings, INSEE collects roughly 250 m3 of MSW and industrial trash daily at the Puttalam cement plant's Eco-cycle waste pre-processing facility unit and shredding facility unit. Additionally, the report claims that INSEE, a socially conscious business, is essential in disposing of non-recyclable and non-biodegradable solid waste through its operational system, which offers long-term solutions to the waste issue.

5.3.5. Air pollution control

Air pollution from dust generated at plant sites and nearby areas is one of the major intrinsic environmental pollution concerns pertaining to the cement industry. While Zhang *et al.* (2016) said the cement sector generates 5-7% of anthropogenic CO2 globally with very high air pollutant emissions, Li, Zhang, Du, and Chen (2020) ranked the cement production business as the second highest emitter of air pollution. As a result, INSEE has installed dust filters that absorb dust through bags and uses additional techniques to reduce the dust,

such as a dry fogging system, road watering, covering, and closed yards. As a result, the dust emission level at its plant site is currently 1 mg per cubic metre, which is significantly lower than the required standard of 293 mg per cubic metre. It shows that INSEE has made serious efforts to lower air pollution in order to preserve a healthy atmosphere at work and nearby.

5.3.6. Biodiversity and environmental conservation

Biodiversity and sustainable development are interrelated (Xu *et al.*, 2020). So in 1992, more than 150 countries signed the Convention on Biological Diversity (CBD) as a common goal of conservation and sustainable use of biodiversity (Wang *et al.*, 2020). Therefore, businesses need to perform their operations while preventing damage to biodiversity. But the integrated cement manufacturing process causes as much damage to biodiversity as mining to supply the required limestoneention on Biological Diversity (CBD) as a common goal of conservation and sustainable use of biodiversity (Wang *et al.*, 2020). Therefore, businesses need to perform their operations while preventing damage to biodiversity. But the integrated cement manufacturing process causes as much damage to biodiversity as mining to supply the required limestone. However, the findings of the study reveal that INSEE makes substantial efforts, such as environmental impact assessment and biodiversity mapping, including existing flora and fauna stocks and special biological values, before starting mining. Then, after mining, the company rehabilitates all mining lands with the same soil layers, restores plants, bushes, and flora, and maintains the ecological system and aquatic habits such as artificial wetlands and salt marshes, etc., while rescued and relocated animals reside at the quarry expansion areas.

When compared with the contribution to environmental sustainability of similar companies in the Southern region, mainly LafargeHolcim and Ambujha Cement (INSEE sustainability reports, 2018), they also have taken the same kind of initiatives at different levels. This study found that INSEE is a responsible corporate citizen in Sri Lanka. It has taken generous voluntary initiatives as it contributes to preserving the environmental sustainability of the country, and the outcomes of those initiatives are in line with the environmental sustainability pillar of the TB

5.4. Contribution for social sustainability (SoS)

The TPL definition of SoS relates to corporate efforts to build social capital and conduct morally and socially responsible business (Klarin, 2018). Additionally, SoS works to uphold equality, human rights, and labour standards, as well as to

enhance people's living conditions and support community development. This is because greater social sustainability will result in better living conditions for both present and future generations (Shirazi & Keivani, 2017). According to the report, INSEE has undertaken the following steps to attain SoS:

5.4.1. Strengthen partnerships with key stakeholders

The formation of multi-stakeholder partnerships is one of the most important factors influencing corporate success and the effective implementation of the SDGs. As a result, the majority of top corporate organisations employ stakeholder engagement to manage them and ensure that the business runs effectively while helping all of the stakeholders in society. As a result, INSEE has been able to strengthen its partnerships with a wider variety of stakeholders and choose and carry out a number of social projects for the benefit of society and the success of the business. Stakeholder meetings are used as a component of business strategy in the sustainability reports of comparable firms like LafargeHolcim and Ambuja Cement, as well as other top companies in Sri Lanka.

5.4.2. Team building

The key to an organization's success is having a motivated and passionate workforce because it significantly increases business sustainability (Jamali *et al.*, 2014). Effective teams help organisations overcome obstacles by developing and implementing plans. As a result, taking care of the employees is a part of the larger social responsibility agenda that businesses use to create productive work teams by enhancing the working environment, workplace safety, promoting skill development, employee welfare, and other workplace amenities (Digalwar *et al.*, 2020). According to the report, INSEE places a high priority on creating productive work teams by putting in place initiatives to minimise workplace accidents, create a healthy work environment, offer training facilities, and offer competitive pay. Furthermore, research shows that there have been no working accidents in recent years, but Lafargeholcim and Ambuja were also able to maintain a comparable position.

5.4.3. Community development

Communities and corporate entities are intertwined. Community development is thus one of the other SoS components (Kochhar, 2014). Many corporate firms engage in social welfare-related community development activities as part of their philanthropic responsibilities (Moyeen & West, 2014). According to the report, INSEE has defined its social duty in terms of community development

because the business heavily relies on regional resources in its operational locations. As shown in Section 5.3 above, the corporation has undertaken numerous historic endeavours to assist the neighbourhood. When similar companies in the area are evaluated for their community development efforts, it is found that they perform comparable tasks at various levels, depending on their operating scales.

5.5. Alignment with Sustainable Development Goals (SDGs)

As a global agenda, the SDGs encourage both the public and commercial sectors to contribute to achieving them by 2030 by acting in a manner that is environmentally, socially, and economically responsible (Campo *et al.*, 2020). According to Adenle (2020), the adoption of solar technology by a few African nations helps meet the SDGs and adds to SD in all three TPL areas. According to Ike *et al.* (2019), multinational corporations considerably help their home nations and operational countries achieve the SDGs. The results of this analysis show that INSEE has fully accomplished the SDGs. No. 4: Quality Education, and No. 13: Climate Action, but not SDGs No. 1: No Poverty; No. 8: Decent Work and Economic Growth; and No. 12: Responsible Consumption and Production. In terms of No. 3: Good health and well-being, No. 11: Sustainable cities and communities, No. 14: Life below water, No. 15: Life on land, and No. 17: Partnerships for the Goals, significant challenges still remain, as do No. 2: Zero Hunger, No. 5: Gender Equality, No. 6: Clean Water and Sanitation, No. 7: Affordable and Clean Energy, No. 9: Industry, Innovation, and Infrastructure, No. 10: Reduce Inequalities, and No. Lafargeholcim has accomplished all of the Sustainable Development Goals (SDGs) with the exception of No. 2—Zero Hunger; No. 10—Reduce Inequalities; and No. 11—Sustainable Cities and Communities (Lafargeholcim Sustainability Report, 2018). The study shows that INSEE is a responsible corporate entity in Sri Lanka by understanding its social responsibilities, stakeholders' expectations, and UN guidelines for SD, and it has initiated and implemented several programmes to achieve the SDGs while satisfying the TBL concept and stakeholders' theory. However, the level of SDG achievement at INSEE does not reach the level of LafargeHolcim.

6. CONCLUSIONS AND IMPLICATIONS

6.1. Conclusion

Elkington, 1990 (Hammer & Pivo, 2017), Freeman, 1984 (quoted in Colvin & WittJustine, 2020), and the UN SDGs were the three main TBL pillars that

the study mostly adhered to. The study used a qualitative methodology and used INSEE as a case study, a major cement manufacturer in Sri Lanka. The study seeks to comprehend the primary INSEE initiatives for the country's SD, to investigate how these initiatives help to attain micro- and macro-level SD, and to investigate its accomplishment of the SDGs. The primary natural resource that INSEE relies on is limestone, which is obtained from the region where the company conducts business. Due to its high CO2 emissions, high power and water usage, air pollution from dust, harm to biodiversity, etc., the operation process poses a number of environmental and social problems. INSEE, a trustworthy corporation with a long history in the nation, has understood these negative effects, and it has developed measures to deal with them while fostering social, environmental, and economic values.

Regarding economic sustainability (EcS), the business has been able to aid in the macro- and microeconomic growth of the nation. Its economic value added for the year 2018 was Rs. 30,583 million, whereas 7.5%, 7.2%, and 6.1% of that amount were paid in dividends, capital costs, and taxes to the government, employees, and investors, respectively. In addition, almost 5,000 employees received direct and indirect benefits, and local suppliers were given more influence because they received 49% of the purchase. Additionally, the corporation has increased its assistance for neighbouring communities through CSR initiatives to improve their living and economic conditions, which shows macroeconomic progress for the nation. In addition, the results of company initiatives to lower energy costs while producing energy from MSW, sustainably consume water through recycling and rainwater harvesting, lower material costs through the use of substitute materials, and upgrade operating systems to lower waste and CO2 emissions have directly increased INSEE's bottom line (profits) as micro-level economic benefits.

Although INSEE operations have a significant negative influence on the environment, the company is able to mitigate these effects by putting in place an effective environmental management system. Currently, the company makes a significant contribution to reducing climate change and global warming by reducing CO2 emissions from 573 kg CO2/ton of cement, which is the lowest level in the southern region's cement industry, by using substitute materials and cutting back on coal consumption by 34%. Furthermore, through recycling and rainwater collection, INSEE adheres to sustainable power use and sustainable water usage policies. The INSEE plant site dust emission level is 1 mg/m3, while the industry norm is 293 mg/m3. Additionally, the corporation has started environmental conservation initiatives such as bio-diversity protection,

an animal rescue programme in quarry sites, the rehabilitation of coral reefs, and the upcountry restoration of damaged fern land.

INSEE has found that by holding regular meetings to learn about stakeholder expectations, it is able to manage stakeholder groups and improve collaborations. One of INSEE's other main objectives is taking care of its personnel. In order to create an efficient work unit with contented personnel, the company has launched a number of initiatives to prevent workplace accidents, enhance a healthy workplace environment, provide training facilities, pay an appealing remuneration package, etc. For the benefit of school-age children, youth, adults, and the entire society, INSEE has also carried out a variety of community development programmes, such as youth vocational training programmes, student support activities, clean drinking water and sanitary projects, a campaign to prevent drug use among youth, community wellness programmes, etc.

In conclusion, the findings of the study reveal that INSEE has significantly contributed to the sustainable development of the country in every aspect as an ethical corporate citizen, while its activities have been directed and are moving towards the achievement of SDGs by 2030.

6.2. Implications of the Study

Stakeholder theory has emphasised that all potential stakeholders' expectations will be appropriately met when business entities function in society as a part of the larger social system. Corporate entities will be able to achieve macro- and micro-level (social) development as a result, which is generally referred to as a corporate contribution for SD under the TBL paradigm. Therefore, the purpose of this study is to evaluate how INSEE has helped SD while meeting stakeholders' expectations. The findings are consistent with stakeholder theory and TBL because INSEE has carried out a number of economic and social programmes to meet the needs of all potential stakeholders while also making a substantial contribution to the SD of the nation. The study's results also give managers at INSEE important information they may use to evaluate their own contributions to the SD and create fresh plans for boosting the performance of areas where progress has not yet been made. Similarly, since INSEE serves as a role model for the sector while making a large contribution to the country's SD, the study findings may be helpful to managers of other corporate organisations.

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