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Evaluate the Causal Relations among the Criteria in Successful CSR Practices

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Abstract: With the growing awareness of Corporate Social Responsibility (CSR), increasingly more companies are becoming aware that business cannot be limited to just maximizing stakeholders' profit. An enterprise should include social responsibility to protect the environment and develop people's talents. Maintaining business competitive power and sustainability while bringing contributions to society has become the new corporate performance target. In Taiwan, the hi-tech industry is an important economics index. Although some hi-tech companies have executed CSR, many of them have not. The reason is mainly due to not knowing how to begin executing CSR or they do not know the proper strategy. This study used the hi-tech industry as the sample for a Decision-Making Trial and Evaluation Laboratory (DEMATEL) to analyze the CSR key factors and strategy. The result confirms that business leaders should start from the "Environment" and focus on "building a green supply chain", "protecting stakeholders' rights and interests" and "building enterprise CSR culture" as the strategy to execute CSR.

Keywords: hi-tech industry; corporation social responsibility (CSR); Decision-Making Trial and Evaluation Laboratory (DEMATEL)



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1. Introduction

Corporate Social Responsibility (CSR) is a common term in recent literature. CSR is highly related to modern's life and has become an indispensable part of modern business (El Ghouli and Karoui 2017; Yuen et al. 2017; Viveros 2017). Every high-technology development, such as more innovative high-tech products with high-speed Internet, has brought convenience to humans. However, at the same time, the high-technology manufacturing process causes pollution and destruction to the environment, society, economics and even humans. The negative impacts have been debated time after time. Therefore, this research examines how the high-tech industry should take Corporate Social Responsibility, how CSR should be implemented and which strategies should be taken. It is necessary to address the present crisis by cooperating in the creation of new knowledge for CSR activity purposes, as this has the capacity to renew the social license of financial organizations. Over many months, COVID-19 has spread, infecting thousands and causing enormous social and financial disturbance. COVID-19 has enabled a brief re-emergence of public and government trust in expertise. Overall, COVID-19 has presented a set of pressing social challenges, especially in CSR activities. In the 21st century, rapid changes in consumption behavior, the development of network technology, the increase in consumer awareness and the awakening of environmental protection have made CSR more important. Consumers focus on more than just the value of the product itself. Whether the goods are made in sweatshops using child labor or if the production process causes pollution to the environment is also important to consumers. Once they find out a cooperation or its products create environmental problems, they will boycott them. Enterprises have gradually come to understand that all of their resources are taken from the Earth and all aspects of manufacturing are subject to the will of consumers who will strictly evaluate them. If enterprises want to manage their corporations' sustainability and create

revenues, they need to treasure and use limited resources properly. In addition, enterprises need to consider how to make a further contribution to society in order to maintain enterprise value and sustainable competitiveness (McCarthy et al. 2017; Eberhardt-Toth 2017; Salazar et al. 2017).

While people enjoy the convenience brought by high technology, they still have doubts about its impact on society (Adhikari 2016; Lyons et al. 2016). Over the past decades, the development of corporate social responsibility has evolved enormously and positively. Corporate social responsibility in the high-tech industry is associated with every aspect, i.e., environmental, labor and economic issues. In 2012, The New York Times reported how Apple Inc.'s OEM factories exploited the laborers who manufactured their phones and tablets. Apple Inc. initially ignored what happened behind the scenes, leading to a wave of boycott discussions and examination of the dark side its supply chain. After that event, Apple Inc. developed a set of operating standards that its suppliers need to adhere to. This standard included a clause that stated if a similar incident occurred; the terms of production cooperation would be terminated if the supplier failed to solve the problem within 90 days (Chen et al. 2016; Mehralian et al. 2016; Asrar-ul-Haq et al. 2017). This shows that even a large global high-tech enterprise such as Apple Inc. cannot defy its consumers, who hold protection of labor rights and corporate social responsibility in high regard. Even though the Taiwanese high-tech industry has been a critical part in this supply chain, the majority could only passively cooperate with the investigation and accept all relevant requirements after the incident in order to not lose the orders and be forced to terminate the partnership. Toward implementing and recognizing the value of social responsibility cooperation, the Taiwanese high-tech industry should catch up and follow this CSR trend, because it will stabilize Taiwan's position in the high-tech industry and global supply chain. Additionally, CSR adherence will ensure future benefits to Taiwanese society (Wirth et al. 2016).

COVID-19 has shown how addressing the present crisis as a multi-part player in the creation of new knowledge for a social purpose has the capacity to renew the social license of universities. With businesses realizing they cannot survive in isolation from environmental and social challenges and are more dependent than ever on their social license to operate, CSR integration has gained momentum in recent years. Having a solid and strong sustainability technique nowadays is vital to confront future challenges such as climate change. Taiwan's high-tech industry has recently explored a series of corporate social responsibility issues. At the end of 2013, the K7 factory of Advanced Semiconductor Engineering (ASE) illegally dumped toxic wastewater. The factory was fined and suspended for a year. This incident was lambasted by all sectors from Taiwan and aroused public attention toward the environmental pollution caused by the high-tech industry. For high-tech companies, this is not only about fines or suspensions that cause profit erosion. Operators began to consider corporate social responsibility implementation, which is urgently needed for high-tech companies. Implementing corporate social responsibility is a complex process. The problems must be eliminated and the correct way to establish long term implementation must be determined. This research discusses Issue 1: Exploring the key CSR drivers in the high-tech industry, hoping to assist the high-tech industry identifying key drivers of CSR and implementing corporate social responsibility. Typically, the European Union monitors companies through a different run of custom-made administrations, such as report audits, materiality appraisal and partner discourse—to ensure both secure in-person and virtual engagements. This transition from shareholder capitalism to stakeholder capitalism, where businesses are required to provide long-term value not only for shareholders but for other stakeholders, including consumers, employees, wider society and the Earth, is likely to be accelerated by the COVID-19 pandemic. COVID-19 has come with a set of pressing social challenges. These include environmental catastrophes such as the Australian droughts and bushfires, and the impending crisis of global warming. Social and health issues, such as debilitating poverty, racial and income inequality and chronic diseases, also loom large. We employ the Decision-Making Trial and Evaluation Laboratory (DEMATEL) method to clar-

ify the intertwined sub-criteria interrelationships within the complex structural hierarchy of the family financial planning problem.

Because the environment changes rapidly, the high-tech industry must keep up with it and constantly innovate to maintain competitiveness. When it comes to implementing corporate social responsibility, facing the reality of scarce resources and identifying appropriate strategies and the corporate social responsibility direction implementation are inevitable. In order not to waste resources to achieve the expected results, precise strategies and corporate social responsibility are needed. As a result, this essay will explore Issue 2: Identifying the causal relationship between the key high-tech industry's corporate social responsibility implementation factors, hoping to assist the high-tech industry to find suitable strategies and congregate limited resources that can be executed effectively to achieve the maximum effect.

This paper demonstrates an integrated multiple-criteria decision-making (MCDM) technique that is more appropriate for Corporate Social Responsibility (CSR). It is evident that COVID-19 has given an opportunity to consider ethical investing and business practices in the private sector as businesses throughout the world struggle with the effects of national lockdowns. We employed the Decision-Making Trial and Evaluation Laboratory (DEMATEL) method to clarify the intertwined sub-criteria interrelationships in the complex structural hierarchy of a Corporate Social Responsibility (CSR) planning problem. This paper proposes a novel hybrid method to cope with the various interdependence and feedback dimensions problem in the Corporate Social Responsibility (CSR) problem. This proposed hybrid method can provide a better understanding of the interrelationship among the evaluation and selection dimensions and solve a complex interacting n Corporate Social Responsibility (CSR) issue that can enhance decision-making quality. What is monetarily insignificant nowadays for a company or segment can become part of the social fabric tomorrow. Financial specialists and companies must embrace forward-looking and proactive approaches to materiality to better distinguish energetic CSR issues and incorporate them in the speculation or administration forms.

2. High-Technology Industry

Many scholars have different high-tech industry definitions due to different research orientations. In recent years, the high-tech industry has been become the most significant industry from all over the world. Many institutions have attempted to define the high-tech industry. The definitions can be divided into technology-intensive and Research and Development approaches (Tsai et al. 2016; He and Wang 2017). Chen (2015) defined the high-tech industry using three requirements: (1) investing a significant proportion of its capital into the research and development of new technologies, (2) utilizing a higher proportion of technical manpower, (3) committing to the invention of new products, manufacturing processes and innovation. He and Wang (2017) defined it as follows: (1) the cost of research and development takes up more than 10% of the Gross Domestic Product, (2) Employees include 'scientists' engineers and technical experts, accounting for more than 10% of the workforce. Chen and Huang (2004) defined high-tech products as the first quarter of technology intensity. Lin (2015) defined high-tech intensity as higher than the average technology intensity. Ho (2011) used the input-output analysis method to substitute a set of products for a single product to measure high technology intensity. The cost of research and development includes the direct expenditures for research toward developed products and the indirect expenditures for research and development of raw materials. According to The National Science Foundation in 1981, the definition of high-tech industry is referred to an industry in which the ratio of research and development expenditures to sales is larger than 3%. In 1983, the U.S. Bureau of Labor Statistics referred to high-tech industry as one whose "proportion of research & development and technician expenditures are twice the average in the U.S. manufacturing industry". In brief, the high-tech industry can be explained as an industry that is invested in research and development, with a high proportion of technical manpower focused on the application of modern

technology in the production process and knowledge-intensive industries (Spence and Liu 2013; Wang and Chiu 2014; Ma and Hung 2015). Consideration of long-term possibilities and hazards, including but not limited to Corporate Social Responsibility (CSR) aspects and broader societal repercussions, is a component of sustainable investing. We have long held the view that it is crucial to incorporate ESG elements throughout the entire investment process and that long-term sustainability challenges have a meaningful impact on both financial and non-financial risk and outcomes. The COVID-19 crisis has reinforced our belief by highlighting the interconnected and interdependent nature of the world's social and economic systems. The COVID-19 emergency began within the misfortune of biodiversity, quick urbanization, increment in populace levels and expanded contact between people and creatures due to deforestation and bush meat markets. As a result, we require a systemic determination approach that looks at the diverse measurements of long-term maintainable advancement. The secretary general of the United Nations, António Guterres, summed this up when he said that “in our interconnected world, we are only as strong as the weakest health systems”.

Since the 1970s, the high-tech industry has been regarded as the most important industry to promote the regional economic development. Countries from all over the world view high-tech industry as an important economic driving force for regional development. With the well-planned technological strategies by governments and the drive from integrative non-governmental companies, the production value has progressively grown. Taiwan has become the world's leading high-tech center for innovation and manufacturing development (Lin et al. 2015; Rasiah et al. 2016).

2.1. Overview of the High-Tech Industry in Taiwan

Products made by the high-tech industry are Taiwan's largest export commodities. The high-tech industry is the most important pillar in Taiwan's economic growth. Taiwan's high-tech industry accounts for 50% of Taiwan's aggregate stock market value. In addition, Taiwan's high-tech industry plays a decisive role in the global tech industry supply chain and is an indispensable force that enhances Taiwan's international visibility (Chen and Huang 2004). As worldwide social and natural challenges become more intense, it is clear that reacting to these challenges requires coordination among different on-screen characters at a scale more prominent than national and nearby governments are able to attempt. There is a developing agreement among policymakers, open arrangement advocates and showcase members (counting companies and speculators) that private enterprise will have to play a part in the arrangement, after complying with laws and directions. This has persevered and, in numerous cases, escalated amid the COVID-19 emergency. Moreover, Taiwan's high-tech industry is highly valued by foreign investors. It is the most important internationalized industry among all Taiwanese firms and the most visible in the severe global competitive market (Spence and Liu 2013; Zhang and Gallagher 2016).

In the past half century, Taiwan has undergone various industrial structural changes, from the early agriculture to the labor-intensive, import-substitution light industry in the 1960s, heavy-chemical industry in the 1970s and strategic manufacturing industry in the 1980s. In the 1990s the high-tech industry was based on the development of the Ten Major Construction Projects (Lin 2015; Bhagwatwar et al. 2013).

Taiwan's high-tech industries can be divided into semiconductor, electronic components and peripherals, optoelectronic products, communications and networking, computer systems and computer components and peripherals. Taiwan's high-tech industries are located mainly in the north, especially in Hsinchu Science Industrial Park where major high-tech industrial enterprises congregate. Since the late 1990s, the government has actively changed the high-tech industry divisions. It has proposed the construction of Nangang Software Park in the north and the Technology Industrial Zone in Yunlin County in Central Taiwan, the Southern Taiwan Science Park in Tainan County and the Tainan Technology Industrial Park in Tainan City. This plan is to improve the highly concentrated high-tech

industry in the north and develop a blueprint for the three major technology industries in northern, central and southern Taiwan (Lo 2010).

In recent years, as the rapid pace of information technology has changed and altered customer habits, the high-tech product life cycle becomes shorter. Manufacturing is highly automated and strongly connected to its downstream manufactures. The diversity in electronic devices, information, communication and consumer electronic products has flourished. It also drives the basic component needs in the upstream. Therefore, the Taiwan high-tech industry has combined the related industries in the upstream and downstream and shown stable upward growth.

2.2. The Problems Taiwan High-Tech Industry Are Facing When Implementing Corporate Social Responsibility

One of the main features of the high-tech industry is investing considerable R&D funds into continuous innovation of products, production and marketing. The new technologies or efficient production techniques often bring considerable profits for enterprises and may directly influence a country's economy (Bhagwatwar et al. 2013; Ma and Hung 2015; Chang et al. 2016). Thus, every action that the high-tech industry takes, such as employee benefits, investor confidence and even a national industrial plan, are also in the limelight. Taiwan's high-tech industry has taken a leading role in the global high-tech industry, especially in the field of design and outsourcing, which has given Taiwan a certain social statement status in the international economy. These weights, changes and desires set out over have carved the way for a "new normal" in CSR administration, where both companies and financial specialists have started to utilize CSR administration as a key differentiator and as an instrument for checking and overseeing dangers. Undoubtedly, numerous speculators are taking a more proactive approach to the observation and administration of CSR dangers, as their engagement endeavors with companies are now not constrained to monetary execution, responses to contentions, emergencies or shareholder resolutions asking company activity or revelation related to natural and social issues. Instead, financial specialist engagement progressively is centered on arrangement crevices, oversight components and execution measurements, independent of whether such issues are part of a yearly common assembly. Taiwan's high-tech industries, similar to others all over the world, are equally viewed by the public for its impact on the global economy, the environment and social mankind. The evolution of global Corporate Social Responsibility (CSR) is considerable and positive. After Dow Jones Sustainability Index (DJSI) was established in 1999, CSR has been pushed to a new stage. In many countries, listed companies have to publish CSR reports and there are many empirical researches about the positive relationship between CSR, operation performance and stock price. In Taiwan, there is no specific industry or listed companies publishing relevant provisions of CSR report. Comparing to the growing of CSR globally, there is still a great gap to close for Taiwan to achieve the universal value of CSR (He and Wang 2017).

Since 2007, "Common Wealth Magazine" awards the title "Excellence in Corporate Social Responsibility". The "Excellence in Corporate Social Responsibility" award takes international indexes such as the UN Global Compact multinational corporation guidance from OECD (Organization for Economic Co-operation and Development) and Dow Jones Sustainability Index as the assessment of sustainability for enterprises. When analyzing the top 50 companies selected for the "Excellence in Corporate Social Responsibility" award from 2007 to 2014, 35% of the high-tech industries were ranked first, followed by the Service (23%) Traditional Manufacturing (21%), Finance (14%) and Chemical Pharmacy (7%) industries. From this analysis, we can see that the high-tech industry is the one that concerns CSR the most and connects CSR to sustainable issues (Zhang and Gallagher 2016). Taiwan's high-tech industry has high productivity, high export value and is half of Taiwan's total stock market capitalization. Moreover, Taiwan's high-tech industry plays a decisive role in the global technology industry supply chain. Among all industries in Taiwan, the tech industry is most valued by foreign investors. It is the most international and exposed in

the global competitive market industries. The high-tech industry attaches great importance to CSR. As a result, it puts more effort and investment into CSR than any other industry. In the “Excellence in Corporate Social Responsibility” assessment, the technology industry performance is comparatively prominent and the number of enterprises that participate is the largest. From an executive point of view, the high-tech industry has internal needs and external pressures from CSR. From an “environmental protection” perspective, the internal demands of the technology industry are saving water and electricity and reducing waste discharge. The tech industry has huge water and electricity consumption and a large amount of waste in the manufacturing process. Saving water and electricity not only saves millions of dollars for the enterprise but also reduce the waste discharge that harms the environment. On the other hand, there are also external pressures from the customers. The highly internationalized high-tech industry plays an important role in the global supply chain, and therefore, foreign investors and foreign customers pay great attention to the high-tech industry implementing green supply chain management.

In 2014, Taiwan’s second-largest wafer foundry—United Microelectronics Corporation (UMC)—won the second prize for large enterprise group in the environmental protection aspect of “Excellence in Corporate Social Responsibility”. On top of that, UMC is included in the Dow Jones Sustainability Index World Index constituent stocks and Dow Jones Sustainability Index Emerging Market Index constituent stocks. UMC’s sustainable performance is rated by RobecoSAM as a silver class enterprise. In the semiconductor manufacturing process, large amounts of Perfluorocarbons (PFCs) are also discharged. UMC continuously improves its water and electricity conservation and its environmental standards; thus, it has won a number of global and Taiwanese awards. In 2013, UMC became the first corporation in Taiwan to receive the Cleaner Production Certification. UMC is the first Taiwanese company to be listed in the Climate Performance Leadership Index (CPLI) of the International Carbon Disclosure Project (Panagopoulos et al. 2016; Ferraz and Gallardo-Vazquez 2016). It is also the first wafer manufacturing company in the world to be awarded the ISO22301 Operational Continuity Management System Certificate. Although the cost of green production is much higher than conventional processes, UMC has taken environmental protection as a long-term development strategy over the past 12 years. It initiated a plan and implemented greenhouse gas reduction. UMC also continues to improve the water recovery rate to more than 90%. In 2010, UMC announced a plan called “Three Green Acts” to reduce Perfluorocarbon (PFCs) emissions by 33% and reduce electricity consumption by 3% in 2012. UMC started the reduction of greenhouse gas emissions from the source and completed semiconductor film replacement to process gas. UMC finally achieved reduction levels beyond its original carbon reduction targets. In 2013, UMC developed a goal that went beyond the Perfluorocarbon (PFCs) reduction target of the World Semiconductor Association. Based on the sustainable development concept, UMC proactively planned and implemented various environmental protection objectives, such as water and electricity savings and environmental protection. UMC is recognized for its sustainable practices in both Taiwan and the world, invigorating the semiconductor industry and even impacting the entire high-tech industry in environment-protection attention. This is in line with the “Public Initiative” part of CSR, which encourages the use of corporate expertise or resources to drive the industry as well as the nation and society as a whole, to unleash the positive influence of enterprises (Voegtlin and Greenwood 2016; Huang and Lin 2016).

The world’s largest power Supplier-Delta Electronics, Inc. is also a worthwhile example for others to learn from. In the past year, Delta obtained the large enterprise group “Excellence in Corporate Social Responsibility” award for three years. It is the only company that beat TSMC (Cycyota et al. 2016). DELTA has set the benchmark for CSR and corporate strategy in all of Taiwan’s businesses. From the startup business ideas, daily operations, product design, product process, office and factory to environmental protection and social participation, DELTA is committed to “energy savings, environmental protection and love for the Earth”. The corporate mission statement, as outlined in “Providing

Clean, Innovative, Highly Efficient Solutions”, is also the point of connection for DELTA to the international trends. Starting from increasing the efficiency of its own supply power, DELTA has increased its power conversion rate from 60% to 90% and has made “Energy Conservation” a core value. Between 2010 and 2013, the associated energy-saving products saved a total of 119 billion kWh, which is equivalent to Taiwan’s electricity consumption growth in the past six years and equal to the carbon emissions from two million cars over one year. In the production process, DELTA first introduced a lead-free solder production line in 2000 at nearly double cost of production. At the same time, in order to comply with the new EU environmental regulations, Sony was looking for a supplier that met the standard. DELTA received the game machine components orders from Sony. Thus far, DELTA has developed seven green building plants. In 2013, the electricity consumption for producing products with values of USD 100 was reduced by 40% in 2009. This saved about 1200 kWh electricity, and the company’s target was to reduce this to 50% by 2015. One can see that Delta’s CSR implementation may initially result in some cost increase, but with the reduction in energy consumption, Delta would have saved electricity, money and resources from the Earth for customers and itself. At the same time, it can enhance the company’s green competitiveness, and promote its sustainable development strategy. Because of the good performance, sustainable business strategies and good image, DELTA has attracted foreign investors. After 2012, the ratio of foreign shareholding is more than 70%, and has now reached 75%. This is one of highest proportion of foreign shareholding among Taiwanese enterprises (Shen et al. 2016).

Whether it is about environmental protection, corporate sustainable management, assisting disadvantaged children, cultivation of future talent or numerous commitments made by enterprises, it is easy to find successful high-tech enterprise examples that implement CSR from Taiwan’s high-tech industry. Due to the great productiveness and export value, as well as the vital role among global high-tech industry supply chain, Taiwan’s high-tech industry has always been the most international and noticeable one in the global market. The high-tech industry is particularly concerned about CSR, and therefore, the investment and importance they make and attach in CSR are relatively higher. Because of its outstanding CSR performance, the tech industry is often seen as a learning model. This essay used the high-tech industry as the example to explore the key factors and strategies for implementing Corporate Social Responsibility. The high-tech industry, as the CSR forerunner of Taiwan’s industries, leads other industries to execute CSR.

3. Literature Review

Corporate Social Responsibility (CSR) is a noteworthy and widely discussed concept, especially with the rise of consumer awareness, the emergence of environmental groups and the transfer of information promoted by the advancement of telecommunication technology (Donia and Sirsly 2016; Kim et al. 2016). The global village formation has developed a variety of different CSR elements. CSR also includes the labor environment, employee rights and sweatshops and child labor. Companies have begun to see CSR as an important indication of the organization’s internal operations involving the relationship between the business and community or society in which it operates.

3.1. What Is Corporate Social Responsibility?

Corporate Social Responsibility (CSR) has become increasingly more important, but what is Corporate Social Responsibility? Corporate Social Responsibility can be described as a moral or ideological theory (Duff 2016). It mainly involves whether government, joint-stock companies, institutions and individuals have to take responsibility for their social contribution. CSR refers to the way in which an enterprise’s operation meets or exceeds ethical, legal and public requirements. It can also be said that a business should take stakeholder impact into consideration when it conducts business activities in excess of the law. The CSR concept is based on the principle that business operations must conform to the sustainable development principle. In addition to taking its own financial and

operating conditions into account, enterprises should also consider their impacts on society and the natural environment.

Whereas the worldwide COVID-19 pandemic delayed financial action and millions of individuals felt like they had to put their lives on hold due to social distancing measures, the progressing emergency has activated the quickly increasing speed of preexisting financial patterns which will profoundly alter the way we do commerce and live our lives. These patterns incorporate digitalization, decarbonization, mechanization, e-commerce and spray working, each of which has moved forward as a result of the emergency. These modern concepts could solve a few CSR issues, among which information security, information protection, workforce administration, differing qualities and considerations, supply chain administration and how companies adjust their trade in reaction to these patterns. Solving these issues is likely to be a deciding feature for their long-term success.

The father of CSR, [Bowen \(1953\)](#), discussed “the obligation of businessmen to pursue those policies, to make decisions and follow lines of action that are desirable in terms of the objectives and values of our society”. From the classic economic theory, CSR is a tool for economic profit ([Duff 2016](#)). Therefore, providing jobs and meeting shareholders’ interests are the best ways to fulfill the social responsibility ([Feicht et al. 2016](#); [Liu and Wu 2016](#)). The most common CSR citations are defined by the World Business Council for Sustainable Development (WBCSD, established in 1995, with its headquarters in Geneva, Switzerland). This states that a corporation “commits to ethical compliance, devotes [itself] to economic development and improves the quality of life of employees and their families, the local community, and society” ([Jiang and Wong 2016](#)). On 31 January 1999, the Secretary-General of the United Nations, Kofi Anan, presented the Global Compact in the World Economic Forum for the first time. This covenant is intended to unite enterprises with United Nations agencies, labor and civil society to support the nine universal principles in the field of human rights, labor and the environment right to bargain collectively: Human rights—enterprises should support and respect international human rights within their sphere of influence; Labor—business communities should support freedom of association and commit to employees’ rights of collective bargaining, eliminate all forms of forced and compulsory labor, effectively terminate child labor and root out discrimination within employment and occupation; Environment—companies should support and adopt proactive approaches to environmental challenges, take initiatives and responsible practices and encourage to develop environmentally friendly technologies. To date, in more than 50 countries, about 700 enterprises have signed the agreement, of which 30% are small and medium enterprises.

In 2001, the European Commission adopted a Green Paper that defines CSR as the relationship between the enterprise and its stakeholders and integrates social and environmental interests on a voluntary basis. Hence, corporate social responsibility consists mainly of three core components: stakeholders of the mutual relations, voluntary, social and environmental interests. In 2002, the European Union facilitated the “European Multi-Stakeholder Forum”, which was a platform for measuring discussions to enhance corporate social responsibility ([Esa and Zahari 2016](#)). In 2002, the United Nations held the “World Summit on Sustainable Development, WSSD, in Johannesburg, South Africa”. It defined how to take sustainable development into action under economic, environmental and social circumstances as the core of the Summit. Organizations that are closely associated with the United Nations also began to define CSR. The International Organization of Employers (IOE), for example, in March 2003, proposed a simple definition of corporate social responsibility that emphasized the relationship between business and the external environment. The company will voluntarily integrate the relationship between society and the environment into interactions between business operations and its stakeholders ([Castejón and López 2016](#)). Additionally, the issue proposed by the International Labor Organization (ILO) in March 2016 defined corporate social responsibility as follows: Under the interaction between internal methods, processes and other actors, enterprises take the

impact of operations on society into account and identify their social principles and values (Ma et al. 2017).

CSR is defined in this study as follows: Under the ethical and transcendental jurisprudence business model, enterprises consider the impact of their business activities and products on the stakeholders, and also how to maintain or promote the interests of society. Corporate Social Responsibility (CSR) has become a basic principle and core value of most companies. Besides commercial interests, this causes corporations to place a high value on human rights, safety and health, community participation and environmental protection. In the high-tech industry, which is highly related to world economic development, carrying out and implementing CSR in enterprises is very important. It is also a topic that is always discussed and examined.

With the progress of network technology and social media development, information as well as a variety of materials can be rapidly transmitted and exchanged worldwide. In the global village era, people's logic, consumer behavior and interaction, as well as their perception, expectations and requirements towards the enterprise and governments are very different from the past. Enterprises in the past tended to maximize their profits as the core business value. As long as the shareholders could create the greatest profit, it would be regarded as a good company. Because it only paid attention to the fundamental parts of its business, it rarely took social perception and environmental influences into account. However, with the demands of a new generation of consumer groups and the increasing awareness towards the environment, countries or even the protection of the Earth, business management has no choice but to adopt these changes.

3.2. The Implementation of Corporate Social Responsibility Becomes the Trend

This new generation of consumers, whose logic and values differ from traditional ones, pursue different lives. Instead of being concerned with the price and trends, the new generation of consumers consider where the clothes come from and how they were made into account when they are buying clothes. Is the cloth made with fair trade cotton? Is it made in a sweatshop? They will also spread their ideas and views through social media platforms and in accordance with their values support or oppose a business. The new generation of consumers even raises venture funds and establishes social enterprises through community forces or bring positive changes to society through various media (Allen and Peloza 2015; Huang et al. 2015). The new generation of consumers believe that they can make the world better, and at the same time, they expect governments and enterprises to have such values to create a world where human rights are more secure, societies are better and the natural environment is protected. The advance of technologies allows companies to improve their efficiency of production and logistics as well as obtain a thorough understanding of consumer needs. Technology has even produced a substantial growth in the spread of one's brand. Businesses, private markets and capital markets have passed the point of no return in terms of CSR appropriation. The continuous worldwide emergency is anticipated to thrust companies and financial specialists encourage to create and progress their administration approaches and communications in connection to CSR dangers, boosting the emotional surge in action around the globe. In light of this unused reality, companies that are moderate in advancing their CSR programs ought to anticipate harder discussions within the future with their shareholders and other key partners. The progress of network technology and the instant information brought by social media also challenges business in how it protects trade secrets. All business operations become transparent. Corporate value and profitability are no longer simply about supply and demand, it includes all aspects of business such as corporation social and environmental impact, whether it is in line with the requirements and expectations of the new generation of consumer groups—guaranteed human rights, a sound society and a protected natural environment. In response to this trend, most companies realize that enterprises may be the one who cause problems in modern society, but they are also the most capable and influential ones to solve these problems (Cuadrado-Ballesteros et al. 2015). As long as they can

adapt to the values of the new generation of consumers, corporations have the opportunity to earn profits under the expectation for human rights, social and environmental protection. As a result, the focus on product manufacturing and executing social responsibility has become the most critical trend for contemporary corporations.

3.2.1. The Key Drivers to Implement Corporate Social Responsibility

The high-tech industry has undoubtedly produced the greatest impact on human industry in 21st century. The advance of technologies has brought convenience to human life, yet also caused many unprecedented problems. When financial specialists analyze long-term effects of and the potential for proceeded instability, the relative solidness of CSR ventures all through the pandemic will likely illuminate their future speculation choices. As speculators may incentivize companies to require a longer-term approach to their commerce, companies' operations techniques will likely alter to meet these requests, making a clear pandemic-driven turning point towards a more sustainable future. These problems result in varying degrees of impact on the global economy, natural environment and even the whole of humankind. In order to reduce the impact of these shocks, the high-tech industry is committed to the implementation of social responsibility in three facets: economy, environment and employees.

Dimension 1: The Dimension of Economics

High-tech industry places the most important position in global economy. It greatly impacts the global economy and regional or national economy (Feicht et al. 2016). Therefore, the high-tech industry needs to consider the economic dimensions and social responsibility. The three factors of the economic dimension:

- Maintain corporate profitability: The high-tech industry is committed to the development of new products based on the implementation of social responsibility. If new products bring convenience to consumers and change their habits, they will also be able to create profits and maintain the profitability of enterprises (Liu and Wu 2016).
- Develop corporate image: When the high-tech industry executes corporate social responsibility, whether through fundraising or participating public welfare activities, it will enhance the overall image of the enterprise. A great corporate image benefits one's competitiveness and brings business revenue and profits (Donia and Sirsly 2016).
- Protect shareholders' equity: Conducting corporate social responsibility in the high-tech industry can strengthen enterprise competitiveness and sustainable management. The enterprise can operate sustainably and shareholders' equity can be protected.

Dimension 2: The Dimension of Environment

Under the laws and regulations of various government organizations and environmental groups, international high-tech manufacturers have to comply with green norms and require their supply chains to follow the same norms in compliance with a variety of international laws and regulations. Taiwan's high-tech industry plays an important role in the global supply chain. Its processes and products must meet the relevant norms to satisfy international companies in environmental protection requirements (Ferraz and Gallardo-Vazquez 2016). Thus, in the past decade, Taiwan's high-tech industry has been committed to the implementation of social responsibility. This often started from environmental protection. The environmental dimensions include three factors:

- Comply with international environmental regulations: Taiwan's high-tech industry is highly internationalized. Its various product testing standards and environmental assessment reports are taken as standards whether enterprises' products and production processes are environmentally friendly (Chen et al. 2016). This is also the minimum threshold for procurement and even the standards to determine whether the enterprise can participate in regional sales activities. Corporate Social Responsibility Report is an important indicator of corporate certification in European and American society.

Therefore, Taiwan's high-tech industry has implemented social responsibility because of international environmental norms.

- Build a green supply chain: A green supply chain includes "green factory" and "green product". In the production process, the high-tech industry often needs to consume a great amount of water and electricity with waste output. Abandoned waste may cause secondary poisoning to the environment. As a result, the international large-scale high-tech industry places a high value on the establishment of a green supply chain to ensure that the entire production process, the required raw materials and the final products are harmless to the environment. In order to establish a green supply chain, small- and medium-sized high-tech enterprises must consider the urgent need to implement CSR so that they can meet the requirement of being a member of the green supply chain (to become a green factory or provide green raw materials).
- Reduce the cost of environmental protection operations: High-tech industries are often defined as industries with high energy consumption and high pollution. Through corporate social responsibility implementation (environmental protection), enterprises achieve water and energy savings, and carbon emission reduction in the production process. These measures help reduce the impact of waste on the environment and reduce future operating expenses. Thus, from the point of reducing environmental protection operating costs, CSR is a helpful guiding paradigm ([Adhikari 2016](#)).

Dimension 3: The Dimension of Employees

According to the World Business Council for Sustainable Development (WBCSD), corporate social responsibility is defined as "the continuing commitment by businesses to contribute to economic development while improving the quality of life for the workforce, their families, the community and society at large". One of the high-tech industry characteristics is a high degree of technology intensity, with the employees regarded as the most important assets. Hence, when the high-tech industry considers conducting corporate social responsibility, it needs to stand in the employee's shoes. Taiwan's high-tech industry is greatly noticeable in the global high-tech industry ([Salazar et al. 2017](#); [El Ghouli and Karoui 2017](#)).

Once the manufacturers were seen as sweatshops, protests began from the International Labor Organization and the importing country trade unions. Import countries may restrict or prohibit imports or even conduct anti-dumping duties on products produce by sweatshops under the pressure of social media. This could lead to government pressure from public opinion, restrictions on imports or even prohibition of the imports. Sweatshop products incur high social anti-dumping duties. Multinational companies who outsource to sweatshops will have their orders cancelled. Companies will find other OEMs because they are afraid of being known for their social irresponsibility. The employee dimension includes three factors:

- Promote the development of talents: High-tech industry solves the new problems for the customers and create profits for enterprises through the use of innovative technology. Accordingly, the core enterprise value is able to provide quality goods and services and achieve sustainable development operations. It is really important for the high-tech industry to promote the development of human talent.
- Strengthen enterprise commitment: Enterprise commitment toward employees includes the employees' basic rights, physical and mental health care, and also the salary and welfare policy. Good physical and mental health enables employees to focus on developing new technology and new products. In order to strengthen enterprise commitment, it is necessary for enterprises to implement CSR which can directly increase profits and attract more talent to join them due to the excellent enterprise commitment, and therefore, improve enterprise competitiveness ([Yuen et al. 2017](#)).
- Establish corporate culture: The generalized corporate culture includes corporate governance, stakeholder communication, and the consensus of social participation in environmental protection ([McCarthy et al. 2017](#)). Even the enterprise's standard oper-

ating procedure (SOP), management knowledge and satisfaction survey are involved in the generalized corporate culture. For the high-tech industry, excellent corporate culture can improve the coherence within the company and make the employees willing to stay in this industry, which changes rapidly. Thus, establishing a good corporate culture is one of the key factors for high-tech enterprises to implement CSR.

This research will explore the key factors and strategies that urge enterprises to implement CSR through the high-tech industry example. Accordingly, we will discuss the problems and concerns in the abovementioned dimensions that the high-tech industry often faces when implementing CSR using the Decision-Making Trial and Evaluation Laboratory (DEMATEL).

4. Decision-Making Trial and Evaluation Laboratory

There are so many factors that influence CSR implementation in the high-tech industry. However, with limited resources, high-tech companies should allocate resources to the most influential factors. Determining the key factors becomes the most critical part. This research will apply Decision-Making Trial and Evaluation Laboratory, DEMATEL, created by the Battelle Memorial Institute of Geneva for Science and Human Affairs Program during 1972–1976. At that time, DEMATEL was applied to analyze complicated and difficult science, politics and economics problems.

DEMATEL Analysis Steps

The DEMATEL analysis steps are based on the research of scholars [Büyüközkan and Güleriyüz \(2016\)](#), [Uygun et al. \(2015\)](#) and so on. It divides the analysis process into eight steps. A brief introduction is given in Figure 1.

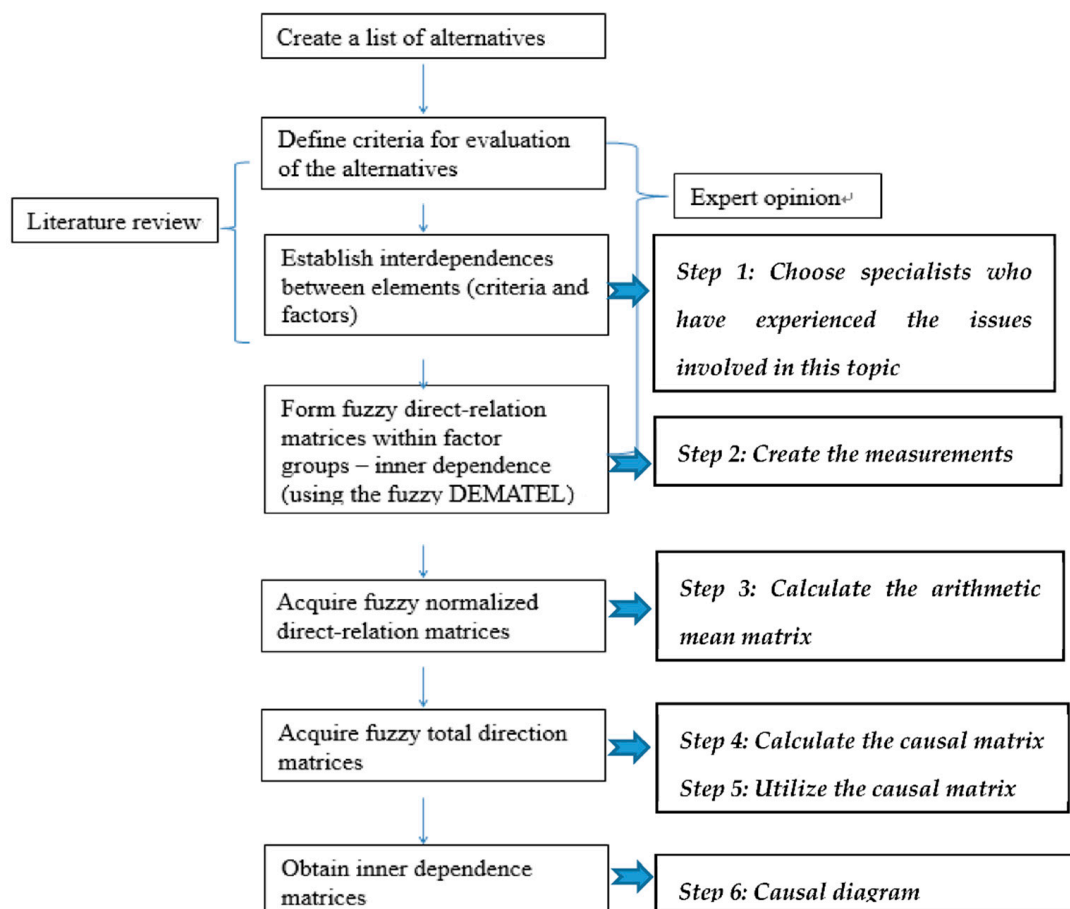


Figure 1. The structure and method of the DEMATEL. Source: [Sun \(2021\)](#).

(1) Define the quality factor characteristics and establish an evaluation scale

List and define the quality factors that affect the complicated system. The quality factors can be obtained through literature review, brainstorming and expert opinions, etc. The evaluation scale for causal relations and pair-wise comparison of the quality factors is then constructed. This study will refer to the scale designed by [Uygun et al. \(2015\)](#) and adopts five levels of measurement, i.e., 0, 1, 2, 3, 4.

(2) Obtain interdependent data for all factors using the expert opinion method

Obtain the data on the information on the influence degree of all key factors for building the matrix through the expert opinion method.

(3) Calculate the arithmetic mean matrix

This is also called the initial average matrix which utilizes data from the collected questionnaire to calculate the arithmetic mean matrix. Separately adding up all interrelated factors for every aspect and then averaging the sum of them, you will get the arithmetic mean matrix. Assume that the number of factors is n , and the value is from K professionals who judge the factors based in the 0, 1, 2, 3, 4—five-level evaluation scale. $A = [a_{ij}]$ and $X_{ij}(i = 1, 2, 3, \dots, n; j = 1, 2, 3, \dots, n)$ represents the influence degree of factor i to factor j , which are then summed up and all X_{ij} are averaged from x experts. The calculation formula is as below to calculate $n \times n$ arithmetic mean matrix (A).

(4) Calculate the direct/indirect matrix

Direct/indirect relation matrix and total-relation matrix illustrate the interrelated impact on each factor and the formula is as below.

(5) Utilize the direct/indirect matrix

Let t_{ij} be the quality factor for the direct/indirect matrix (T), and $i, j = 1, 2, \dots, n$. Sum up the columns and rows of direct/indirect matrix (T). d_i is the sum of column i , which means the sum of the quality factors i impacts other quality factors. It includes direct and indirect impact, which is the degree of direct or indirect impact on other factors. r_j is the sum of row j , which means the sum of the quality factor j being the result of being impacted by other aspects. It includes direct and indirect impact which is the degree of direct or indirect impact by other factors.

Then, define $(d_m + r_m)$ as Prominence, and the equation $m = i = j = 1, 2, 3 \dots, n$ is summed up using the total from every column and row representing the degree of the quality factors being impacted and impacting each other, which is also the relevance intensity among the factors. This shows the core level of the quality factor m in the problematics; the bigger $(d_m + r_m)$ is, the higher the interrelation level between the quality factor and the whole assessment factors is. Define $(d_m - r_m)$ as the relation summed up by the difference between the total in the columns and rows representing the degree of difference, which is the intensity of the quality factors being impacted and impacting each other. It also shows all of the causal relation degrees of the factor m in the problematics. If $(d_m - r_m)$ is positive, then the quality factor tends to be the cause, but if it is negative, then the quality factor tends to be the cause.

5. Empirical Research

This research aims to explore the key factors for enterprises to implement CSR by applying DEMATEL for decision analysis, and therefore, identify the relations between every factor from the analysis. This research explores the degree of impact of every dimension factor and also the degree of impact of every sub-dimension factor by their relevance. This helps enterprises determine if they should implement CSR and the possible strategies. There are many reasons for the high-tech industry to implement CSR, but after reviewing the related literature and the general situation of high-tech industries that have implemented CSR, this research summarizes three main dimensions with three sub-dimensions. This research then analyzes the degree of relevance between every dimension

and sub-dimension separately. The research structure shown in Figure 1 explains “the key factors in implementing CSR divided into economics, environmental, and employee dimensions”. In order to further explore these three dimensions, three sub-dimensions are listed under each dimension respectively. We examine the degree of interaction among every dimension and further understand the impact level among every dimension to identify the key factors and strategies.

The main dimensions that affect the high-tech industry in implementing CSR include economics, environmental and employee dimensions. Under these three dimensions, there are three sub-dimensions, as shown below:

1. The economics dimension

Due to the various evolutions of technologies, the global economy now has no boundaries. The high-tech industry plays an important role in global industries and economics. Hence, the high-tech industry embraced the CSR concept earlier than other industries and understood the interaction relations between enterprises and economics.

Sub-dimensions of economics include: Maintain corporate profitability; Build up the corporate image; Protect shareholders' equity.

2. The environmental dimension

The environmental issue has always been a priority in CSR. The 21st century in which global warming has become more serious, with severe natural disasters continuing to occur, how enterprises achieve the environmental sustainability by implementing CSR is a subject that people should think about. “Environmental protection” has been the most noteworthy dimension in the high-tech industry's CSR implementation. Why environmental protection is the most critical point for the high-tech industry to implement CSR is due to the external pressure and internal demand. Environmental protection is the key factor as to whether the high-tech industry implements CSR or not.

Environmental sub-dimensions include: Comply with international environmental regulations; Build a green supply chain; Reduce the cost of environmental protection

3. The employee dimension

The World Business Council for Sustainable Development (WBCSD) defines CSR as follows: “In order to pursue the goal of sustainable economic development, [a] business makes a commitment to [a] high quality of life together with employees, families, communities and local societies”. The high-tech industry is a highly labor-intensive industry, so when it comes to CSR implementation, it absolutely should include the employee part.

The employee sub-dimensions include: Promote the development of talents; Strengthen enterprise commitment; Establish corporate culture.

5.1. Research Period and Research Subjects

This research explores the key factors and strategies in implementing CSR in the high-tech industry and further applies DEMATEL as an analysis tool. The questionnaires were made based on the three main dimensions and the three sub-dimensions. There were 22 copies of the questionnaire issued; 17 valid copies and 5 invalid copies were retrieved. The questionnaires delivery began on 27 November 2014 to December 2021. The criteria for determining invalid questionnaires are as follows: when two dimensions interact with each other and more than three impact values are the same, the questionnaire would be determined invalid. For example, the economic factor values impacting on environmental factors and the environmental factor values impacting the economics factors are the same, which meets the condition for an invalid questionnaire.

Research subjects for this research were experts from industry circles and academic circles who should clearly understand both the high-tech industry and CSR. The information on the interviewees is shown in Table 1 “basic information on interviewees”. In order to protect interviewees' privacy, the interviewees are identified as letters from A to Q.

Table 1. Basic information on interviewees.

Interviewee	Institution	Department	Title	Seniority
A	National Taiwan University	Department of Information Management	Assistant Professor	2
B	National Kaohsiung University of Applied Sciences	–	Associate Professor	12
C	I-Shou University	Business Administration	Assistant Professor	9
D	Taiwan Semiconductor Manufacturing Company	Customer Service	Project Manager	15
E	Riant Biotechnology	–	Assistant Manager	19
F	Industrial Technology Research Institute	–	Industrialization Manager	15
G	Wistron Corporation	Marketing & Sales	Manager	10
H	HP Inc.	Server Development	Engineer	14
I	HP Inc.	Department of Display Device	Purchasing Planning Manager	10
J	HP Inc.	Department of Personal System	Senior Project Manager	10
K	HP Inc.	Department of Personal System	Purchasing Planning Coordinator	14
L	HP Inc.	Server Purchasing	Strategic Sourcing Manager	7
M	HP Inc.	Department of Personal System	Material Control Manager	7
N	IQE	Wireless technology	Vice Manager	20
O	C.S. Aluminum Corporation	Equipment Office	Technician	15
P	Lin Yuan Property Management Co.	Administration Management	Clerk	20
Q	Nan Shan Life Insurance	Insurance Claims	Coordinator	7

5.2. Analysis of the Direct and Indirect Impact of the Main Aspects

The main analysis is designed to identify the impact and interrelations between the three aspects Economics, Environment and Employee of implementing CSR in the high-tech industry. Furthermore, it will highlight the key aspects. The direct/indirect main aspect matrix is shown in Table 2.

Table 2. The direct/indirect main aspect matrix.

	Economics	Environment	Employee	D
Economics	−0.94	−0.19	−0.18	−1.31
Environment	−0.17	−0.88	−0.19	−1.25
Employee	−0.20	−0.24	−0.84	−1.28
R	−1.31	−1.31	−1.21	
D + R	−2.63	−2.56	−2.49	
D − R	0.00	0.06	−0.07	

The causal diagram horizontal axis is D + R and the vertical axis is D − R. D represents the total values in every column and R represents the total values in every row. D + R means the total degree of the factor being impacted and impacting on other factors, and the larger the D + R value is, compared to other dimensions, the degree of the dimension being impacted and impacting is larger. D − R means the net effect in all influence matrix. The

larger the $D - R$ value compared to other dimensions, the larger the impact degree of this dimension on the high-tech industry's CSR implementation is. Accordingly, we can see from the causal diagram that among the economics, environmental and employee dimensions, the environmental dimension is the most critical dimension for implementing CSR. The second-most important is the economics dimension and last is the employee dimension.

5.3. The Causal Analysis of the Economic Sub-Dimensions

In the economic aspect, we will discuss the impact and interrelation between the three factors “Maintain corporate profitability”, “Build up corporate image” and “Protect shareholders' equity” and the success implementing CSR in the high-tech industry in order to screen out the key factors. The direct/indirect matrix of sub-aspects of organizational culture is shown in Table 3.

Table 3. The economics sub-dimension impact degree.

	Maintain Corporate Profitability	Build Up Corporate Image	Protect Shareholders' Equity	D
Maintain corporate profitability	−0.93	−0.19	−0.18	−1.30
Build up corporate image	−0.19	−0.84	−0.23	−1.26
Protect shareholders' equity	−0.19	−0.19	−0.88	−1.27
R	−1.31	−1.22	−1.29	
D + R	−2.61	−2.48	−2.55	
D − R	0.01	−0.04	0.02	

It shows that the economic causal diagram sub-dimensions among the three maintain corporate profitability sub-dimensions, build up corporate image and protect shareholders' equity. The protect shareholders' equity sub-dimensions is the most critical dimension for implementing CSR. The second is the maintain corporate profitability sub-dimension and the last is the develop corporate image sub-dimension.

5.4. Environmental Sub-Dimension Causal Analysis

For the environmental aspect, we will discuss the impact and the interrelation between the three factors “Comply with international environmental regulation”, “Build green supply chain” and “Reduce the cost of environmental protection”. The direct/indirect matrix of environmental sub-aspects is shown as Table 4.

Table 4. Impact degree of environmental sub-dimensions.

	Comply with International Environmental Regulation	Build Green Supply Chain	Reduce the Cost of Environmental Protection	D
Comply with international environmental regulation	−0.89	−0.16	−0.19	−1.24
Build green supply chain	−0.16	−0.93	−0.16	−1.25
Reduce the cost of environmental protection	−0.18	−0.17	−0.86	−1.21
R	−1.22	−1.27	−1.21	
D + R	−2.46	−2.52	−2.42	
D − R	−0.02	0.01	0.00	

From the above result, we can determine, from the environmental sub-dimension casual diagram, whether companies comply with international environmental regulations,

build a green supply chain and reduce the cost of environmental protection. The ‘build green supply chain’ sub-dimension is the most critical dimension for implementing CSR. The second is the ‘reduce the cost of environmental protection’ sub-dimension and the last is the ‘comply with international environmental regulation’ sub-dimension.

5.5. The Causal Analysis of the Sub-Dimensions of Employee

In the employee aspect, we will discuss the impact and interrelation between the three factors “Promote the development of talents”, “Strengthen enterprise commitment” and “Establish corporate culture”. The direct/indirect matrix of sub-dimensions of technology inventors is shown in Table 5.

Table 5. Impact degree of employee sub-dimensions.

	Promote the Development of Talents	Strengthen Enterprise Commitment	Establish Corporate Culture	D
Promote the development of talents	−0.86	−0.18	−0.20	−1.24
Strengthen enterprise commitment	−0.20	−0.90	−0.18	−1.28
Establish corporate culture	−0.17	−0.17	−0.91	−1.26
R	−1.23	−1.26	−1.29	
D + R	−2.47	−2.54	−2.55	
D − R	−0.01	−0.02	0.03	

This shows that the employee sub-dimensions’ causal diagram among the three sub-dimensions of ‘promote the development of talents’, ‘strengthen enterprise commitment’ and ‘establish corporate culture’, the ‘establish corporate culture’ sub-dimension is the most critical dimension for implementing CSR; the second is the ‘promote the development of talents’ sub-dimension and the last is the ‘strengthen enterprise commitment’ sub-dimension.

5.6. Summary

This research is an empirical analysis that lists the key factors and strategies impacting the high-tech industry’s CSR implementation. How COVID-19 will eventually affect appraisals, which look for to supply credit-risk viewpoints over the medium to long term, remains to be seen. The widespread proceeds, and government intercession to help companies has muddled the water in terms of gaging credit quality. Given COVID-19’s noteworthy appraisals affect and the potential for future flare-ups, the current widespread shows up likely to quicken the selection of CSR variables into chance investigation. That selection had picked up noteworthy force some time since the pandemic started, when evaluation offices hopped on to the CSR temporary fad by procuring numerous CSR inquiries. The impact degree of the key factors and strategies of each main dimension and sub-dimension in the high-tech industry’s CSR implementation are identified using DEMATEL analysis. The empirical analysis results show that the environmental dimension is the most critical factor that the high-tech industry should consider when implementing CSR. In the environmental sub-dimensions, “Build green supply chain” is the most important factor that should be considered when the high-tech industry implements CSR. In the economics sub-dimension, “Protect shareholders’ equity” is the key factor and in the employee sub-dimension, “Establish corporate culture” is the key factor.

6. Conclusions

CSR includes various dimensions, such as environmental protection, labor environment and employee rights. More and more enterprises start seeing CSR as an important subject of internal operation and thinking about the relations among the enterprises themselves, communities and societies. Corporations need to construct a story around their

maintainability and CSR activities and clear a pathway to their objectives; moreover, companies ought to consider commissioning consumer overviews, center bunches and industry benchmarking to assist them and lock in in valuable exchange. Information and investigation bits of knowledge will empower them to advance their programs, oversee their CSR dangers and distinguish openings to form esteem. This research uses the high-tech industry as an example to explore the key factors and strategies of implementing CSR DEMATEL analysis. Through the analysis, we find out that in the dimensions of economics, environment and employee, “the environmental dimension” is the most significant factor that should be considered when high-tech industry implements CSR. Among every sub-dimension, “build green supply chain”, “protect shareholders’ equity” and “establish corporate culture” are respectively most critical impact factors. We hope more enterprises will understand and implement CSR through the results of this research.

6.1. Management Implications

High-tech brings convenience to humans and great economic value to Taiwan. This paper employed the DEMATEL method to analyze the model and offer suggestions as to what the key influencing factors are in a budget planning strategy. Through this well-constructed DEMATEL approach, our research results show that a proper operations strategy and management of both resource usage and task arrangement in accordance with policy making will accomplish excellent CSR activities strategy results. We always ignore the negative effects behind these economic benefits. After neglecting the negative impact on the social environment, the whole society has had to pay for the result. DEMATEL helped to develop a strategy by directly comparing the interrelationships of the key factors from the problem. The relations and the strength of influence among the key factors were obtained from the complex problems. DEMATEL turned the relations among the criteria into a clear structural model and dealt with a series of interrelations among the criteria. This paper discusses the key CSR strategy factors. However, because of the high complexity and the interrelations in the numerous factors, with limited resources, we had to allocate resources to the most critical key factors. All of the above was in line with the DEMATEL characteristics. Therefore, we adopted this analysis method to achieve the goal of this study. We described the organizations where the specialists worked and the participants who provided the fundamental data, summarized the experts’ primary conclusions on all the topics and then grouped these opinions into four categories that can be used as the basic system for the ensuing survey. In addition to answering the survey on developing this assessment, the specialists provided their professional information and involvement in strategic alliances, as well as a mechanical point of view. Fortunately, we can see that the high-tech industry has gradually realized that implementing CSR is inevitable, based on every significant event that has occurred in the high-tech industry in recent years. An example is the collapse of Procomp Informatics Ltd. in 2004, which created false financial statements and laundered speculated stocks, and therefore, failed to pay the corporate bonds at maturity and then applied for bankruptcy protection. This event caused a huge social loss, and at the same time, it made the society and enterprises aware that enterprises should have honesty and integrity toward their stakeholders and protect shareholders’ equities. In 2010, there were many incidents of attempted suicides in the subsidiary Foxconn of Hon Hai in China, which not only aroused society’s attention to labor rights, but also caused the labor-intensive high-tech industry to begin to consider labor rights protection and good corporate culture as important matters when implementing CSR. The wastewater dumping scandal by ASE in 2013 caused the public to scrutinize the impact of the high-tech industry on the environment. Moreover, the environmental issues and CSR of the high-tech industry become more inseparable. This result showed that the “Environment” dimension was the factor that impacted the other dimensions the most and was the factor to be considered first. Could the selected program exist in synergy with CSR implementation? Are there any conflicts between the dissemination and the CSR implementation? Industrial collaboration and logistics support have become an

important trend for complementing the CSR implementation strategy. We should try to develop a more skilled and specialized labor force. Educators classify their programs by occupation, but the skills used in the workplace are defined by the context in which they are applied. This helps the financial specialists to diminish the obstructions and obtain much data from various powerful components, utilizing expert information. These findings will support future research, as a useful reference for analysts to build CSR implementation strategy models.

However, the way that enterprises implement CSR has previously been financial donations to charities. Obviously, financial donations cannot meet the public's requirements and expectations of enterprise CSR implementation today and donations are not the only way to implement CSR. Even though increasingly more high-tech companies realize that, they have no idea how to implement CSR.

Through this empirical analysis, we suggest that the high-tech industry implement CSR from the environmental dimension. The specific implementation strategy examples comply with both international environmental regulations and CSR implementation. First, refer to the international environmental regulations and carefully consider the business internal resources and conditions. Second, establish environmental security committee. Third, develop manufacturing standards and produce the products based on the standards. Enterprises should not only regularly inspect if the manufacturing standards comply with international regulations, but also increase the manufacturing standards based on the reputable international companies' "green supply chain" regulations. For example, they should set up stricter carbon emission standards than international regulations, increase the recycling and reuse rate of wastewater generated during the producing, increase the use of eco-friendly materials in products and decrease the use of consumables, ink and product packaging.

This paper demonstrates an integrated multiple-criteria decision-making (MCDM) technique that is more appropriate for CSR activities. We employed the Decision-Making Trial and Evaluation Laboratory (DEMATEL) method to clarify the intertwined sub-criteria interrelationships in the complex structural hierarchy of a national defense and force budget planning problem. This paper proposes a novel hybrid method to cope with the various interdependence and feedback dimensions problem in the national defense and force budget planning problem. This proposed hybrid method can provide a better understanding of the interrelationship among the evaluation and selection dimensions and solve a complex interacting CSR activities issue that can enhance decision-making quality. These strategies can help high-tech companies become part of the green supply chain and CSR implementation through environmental protection. Additionally, we suggest that the high-tech industry have strategies based on the "Protect shareholders' equity" and "Establish corporate culture" dimensions. Traditionally, we think that enterprises' duty to shareholders is creating maximum profits for them. From the CSR viewpoint, we suggest that enterprises connect "Protect shareholders' equity" to sustainable development as the strategy for implementing CSR. This can be realized by consulting domestic and foreign experts for the experience and referring to the experience of associated international enterprises, so that the enterprises can strengthen corporate governance and board structure. For example, the company board can select more professionals to join and increase the ratio of independent directors to prevent company decision-making blind spots. The management should regularly propose a management report and strategic plan to the top supervisors who make decisions in order to help them realize what problems the company is facing, and therefore, adjust the strategic direction according to the problems. Enterprises are able to strengthen operations and improve long-term competitiveness to achieve the sustainable management goal. Enterprises do not just focus on creating short-term returns for shareholders anymore. They care about shareholders' long-term assurance and interests, which generate the positive impact on social economy, and thus, reach effective CSR implementation. From the "Establish corporate culture dimension viewpoint", we suggest that enterprises conduct satisfaction surveys regularly to understand employees and stakeholders' needs. The

establishment of a flowing internal communication channel allows employees to propose concrete suggestions and also allows management to thoroughly understand the problems. Enterprises can inspire employees to become involved in social and environmental activities by encouraging and supporting them. For example, through the use of Internet resources, employees can assist children with schoolwork in remote areas. Second, through industry-university cooperation, employees can share working knowledge and experience with students. Third, they can help the disadvantaged learn by utilizing the enterprise's inventions. Last, a small amount of funds can be allocated to third-world countries to help them have their own startups. These methods will allow employees to realize their importance of being part of the enterprise's development. Additionally, enterprises support and encourage employees to participate in social welfare activities with their resources, which enables employees to dedicate their abilities to society. These strategies directly and practically help disadvantaged groups in society, and also enhance employees' centripetal force within the company. These strategies help the enterprises establish good and positive corporate culture and image, which make employees feel securer, and therefore, positively affecting social stability and harmony.

6.2. Research Limitation and Future Research Direction

Compared to CSR international awareness and implementation, Taiwan's awareness and actual CSR implementation are still backward. This research takes high-tech industry as an example to explore the key factors and strategies for implementing CSR in the high-tech industry. Hence, every impact factor and strategy set by this research is based on the environment and the problems that the high-tech industry is facing. As a result, the suggestions this research proposes are merely for the key factors and strategies of implementing CSR in the high-tech industry. These factors and strategies cannot be applied to all the other industries that want to implement CSR. The high-tech industry includes enterprises of different sizes that have dissimilar CSR implementation processes. This research does not particularly set the weights of every impact factor and the orders of implementing the strategies. This research is unable to propose different suggestions based on the company size or companies that "haven't implemented CSR", "just started implementing CSR" or "have implemented CSR for years".

Moreover, increasing the industry's CSR awareness and implementation, or the government's guidance and regulations, we believe there is still a lot to explore and discuss; for instance, how international laws affect Taiwanese enterprises implementing CSR. We hope to design a more elaborate research methods and more rigorous research process that includes all industries and more in-depth examination. In this way, we can help Taiwan's enterprises participate more in CSR implementation, becoming part of the global corporate citizenship society, and therefore, do something positive for the Earth we live on.

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