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Performance Evaluation of CSR in Supply Chains

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Abstract—**Given a lack of studies that have explored the integration of Corporate Social Responsibility (CSR) management within supply chain operations reference (SCOR), the purpose of this study is to identify the discrepancies in how CSR management (CSRM) be incorporated into SCOR, including issues with the hierarchical representation of CSRM processes, metrics, best practices and skills. Therefore, this research aims to establish a performance evaluation framework with application of SCOR model using Fuzzy extended AHP method for evaluating CSR performances in supply chains. These may be potentially helpful for embedding CSRM within other supply chain management processes, visualizing CSR performance metrics in a supply chain's performance hierarchy and integrating supply chain management with organisational enterprise CSRM.**

Keywords─*Corporate Social Responsibility; Supply chain performance, Supply chain operations reference; Fuzzy extended AHP;*

1. Introduction

Consumers are increasingly aware of and demanding the responsibilities of business to incorporate the environment, local communities, employment practices and ethics in business practices, it forces and motivates more corporate management to actively participate in a wide range of social welfare activities and to improve its corporate social responsibility (CSR). A variety of companies are now disclosing these activities in their annual reports. For instance, four types of listed companies have to disclose these activities as a CSR reporting in Taiwan. Furthermore, companies with equity of more than 5 billion New Taiwan Dollars are now required to do so from 2017. CSR is now prominent and evident more than ever due to the emphasis laid on businesses regarding environmental, social and ethical issues.

With globalization, management attention has moved from competition between firms to competition between supply chains [5,27]. Companies need to expand the CSR context in their supply chain management to include the behaviour of suppliers. For example, incidents like the 2013 Savar building collapse pushed companies to consider how the behaviour of their suppliers impacted their overall impact on society. Irresponsible behaviour reflected on both the misbehaving firm, but also on its corporate customers. Therefore, CSR in supply chain is now gaining high regard by scholars and stakeholders. Using keywords of "supply chain" and "CSR", there are less than 10 relevant papers in the literature. There are still little studies that investigate the CSR management in integrated supply chain management. As more corporations commit to CSR policies, there is increasing pressure to consider social impacts throughout the supply chain [15]. Hence, managing CSR in supply chain is now important more than ever due to the emphasis laid on global SCM regarding the environmental, social and ethical issues.

Supply chain management is perceived as a tool to ensure continuous improvement by many firms in the competitive market. However, occurrences reported in the literature on maximization of overall supply chain profits through a collaborative efforts of the chain members are rare. This is mainly because of their failure to develop the measures and metrics needed to fully integrate their supply chain to maximize effectiveness and efficiency [11, 32]. SCOR provides an opportunity to include the measures which can capture the performance of many overlapping activities of the various entities in supply chain, including metrics with interdependencies that cross the borders of organisations. The SCOR of the Supply Chain Council proposes metrics to manage performance on multiple dimensions in a hierarchical cross-functional process reference model that links

business process, metrics, best practices, and technology features into a unified structure to improve the effectiveness of supply chain management [30].

The supply chain operations reference (SCOR) model, developed by Supply Chain Council (SCC) and Advanced Manufacturing Research (AMR), is a cross-industry framework for evaluating and improving enterprise-wide supply chain performance and management [29]. From a SC process perspective, the SCOR model is a strategic planning tool that provides five strategic SC process types, namely Plan, Source, Make, Deliver and Return for communicating among supply chain partners and measuring performance objectively [14]. Hence, SCOR provides a methodology that enables companies to analyse and improve their supply chain performances in a systematic way, to enhance communication among the members in the supply chain, and to design a better supply chain network. Fig.1 presents the conceipetual framework of this study on managing CSR in supply chains by using the general principles of hierarchical decomposition espoused by Simon [28]. Within SCOR, CSRM has been reflected at Level 3 as a set of "Enable" type process elements i.e., Manage SC Plan CSR, Manage SC Make CSR, Manage Supply Source CSR, Manage SC Deliver CSR and Manage SC Return CSR.
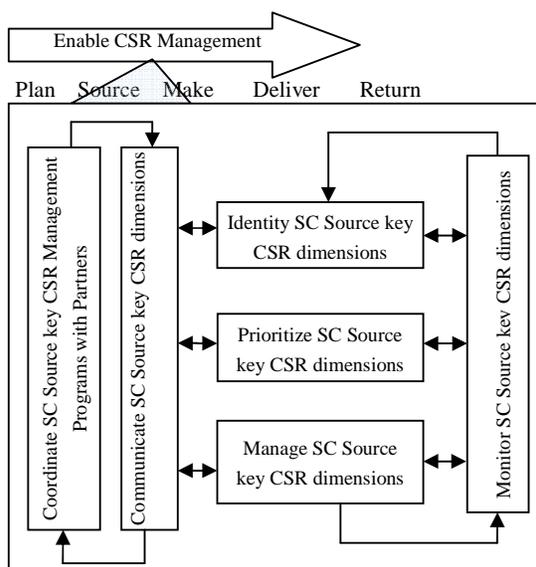
Figure 1. Conceipetual framework for managing CSR in supply chain, adapted from Rotaru et al. [24].

In view of this trend, CSRM is increasingly viewed as one of the critical strategic processes/functions of modern SCs [31] and, together with performance improvement, as a core SC value generating mechanism [15,19,20,33]. We suggest, as the cornerstone for this reconciliation, the use of a standard set of SC performance issues to structure CSR management and communications in supply chains. Therefore, this paper proposes a performance evaluation framework for CSRM in supply chains by utilizing SCOR model to account for indirect relationships and the complex interactions existing among the CSR variables in supply chain.

The rest of the paper is organised as following: Section 2 reviews the recent literature on CSRM and SCOR studies. Section 3 provides description of our research methodology. Section 4 presents an application case in food supply chain. Finally conclusion and managerial implications are presented in last section.

2.   Literature Review

Even though there are studies investigating the CSRM and SCM, these two streams of study often appear independently in literature. Here, a review of the related literature is presented below in these two distinct but related research streams.

The term "corporate social responsibility" became popular in the 1960s and has remained a term used indiscriminately. The definition of CSR is still a fairly intangible, ambiguous concept as it changed according to business aims and industry practices in 1980's and 90's. It appears to reflect individual businesses rather than all corporations, and their relationship with stakeholders and society. Wu [36] highlights that corporate governance structure significantly influences CSR performance by using stakeholder theory as an analytical framework. The results showed that local companies lacked of both internal dimension and external dimension to carry out CSR strategy. From the CSR performance of Taiwanese firms, it was a typical pattern that the management responded to the expectations based on the stakeholders' power.

As it continued to ignite interest in governments, NGOs and businesses, attempts to be comprehensive in CSR efforts have increased. Elkington   [8]   proposed   a   prominent

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conceptualisation of triple bottom line (People, Profit, Planet) thinking that becomes an important inspirational source for much contemporary CSR literature. According to Business Dictionary, CSR id defined as "A company's sense of responsibility towards the community and environment (both ecological and social) in which it operates. Companies express this citizenship (1) through their waste and pollution reduction processes, (2) by contributing educational and social programs and (3) by earning adequate returns on the employed resources"[7]. Later researchers conclude that CSR becomes a multi-quantifiable tool to represent responsible business activities, with direct links to annual accounting reports and performance indicators [6,13,16]. One of the most outstanding examples of multi-dimensional CSR model is the pyramid of CSR that consists of economic, ethical, legal and philanthropic responsibilities [2]. Lozano and Huisingh [18] stated that many guidelines and standards of sustainability issues are one of the reasons for leading the separation of these dimensions.

As businesses have increased their outsourcing in size and economic autonomy, it began to see a move from responsible actions; towards competitive and responsible actions in supply chains. Generally, all organisations have an impact on environment and society from supply chains, whether it is through their operations/products or services. That is why, nowadays, pressure from the consumers and non-governmental organisations is increasing very rapidly upon the companies specifically to implement CSR-based supply chain performance system [33]. To maintain an effective and efficient level of CSR, it is required for an organisation to perform their supply chain operations in the socially responsible mode [33]. Some of the researches are as: Maloni and Brown [19] developed a comprehensive framework of unique CSR applications in the food supply chain including animal welfare, biotechnology, environment, fair trade, health and safety, and labour and human rights. General supply chain CSR issues such as community and procurement are also considered. Ultimately, the framework serves as a comprehensive tool to support food industry practitioners and researchers in the assessment of strategic and operational supply chain CSR practices. Perry and Towers [22] developed a CSR framework that identifies inhibitors and drivers to CSR implementation from

a fashion supply chain management perspective. They used a preference rating approach (synthesized in company preference rating and company satisfaction assessment approaches) in two stages to analyse the interaction among CSR and supply chain performance. Wiese and Toporowski [35] combines agency theory with failures in CSR along food supply chains and illustrate that CSR failures can have negative impacts on the companies' reputation and therefore also financial effects. Implementing a successful CSR policy should therefore be a primary interest of companies. Forsman-Hugg et al. [10] identified the key dimensions of food chain CSR for better understanding of core CSR issues and their relevance in complex chains and networks. Manning [20] included a literature review and the development of a corporate social responsibility and consumer social responsibility interaction model for the food supply chain. The results show that organisations need to consider the influence of the nature of consumer social responsibility associated with their products and services in the development and refinement of CSR strategies. Based on such type of performance systems, socially responsible behaviour can be transferred along the whole supply chain [19].

3.   Methodology
3.1   Supply chain's performance assessing criteria

Supply chain's performance metrics or assessing criteria refer to measurement standards that can be used to quantitatively assess or express achievement of a company's objectives of CSR implementation associated with supply chain processes. In this paper, the comparative assessing criteria are adopted from the study of Petersen and Lemke [23], which explored reputational risks that are borne in the supply chain. It provides a theoretical framework to help in the characterisation of CSR, as an entry point to capture and illustrate expert views in relation to reputational risk in supply chains. They utilised corporate social responsibility as a foundation that is proposed to address a number of risks including those related to traditional SC performance such as price, availability and quality. The study differentiates seven performance domains with assessing criteria including: Financial performance, Managerial quality, Long-term investment,

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Resource use, Products and services, Employee management and Innovation, that are explicitly used for prioritization of CSR measures in this study.

3.2   Hierarchical structure of performance evaluation

A graphical representation of the SCOR-AHP model and decision environment is shown in Fig. 2. The determinants of performance dimension (plan, source, make, and deliver) are drawn from a well-established SCOR model. These determinants are modelled to have dominance over the dimensions of supply chain performance. The supply chain performance assessing criteria contribute to an overall supply chain performance. Thus, these are dependent on the dimensions. In this model the interdependencies among the performance dimensions are also considered in Fig. 2.
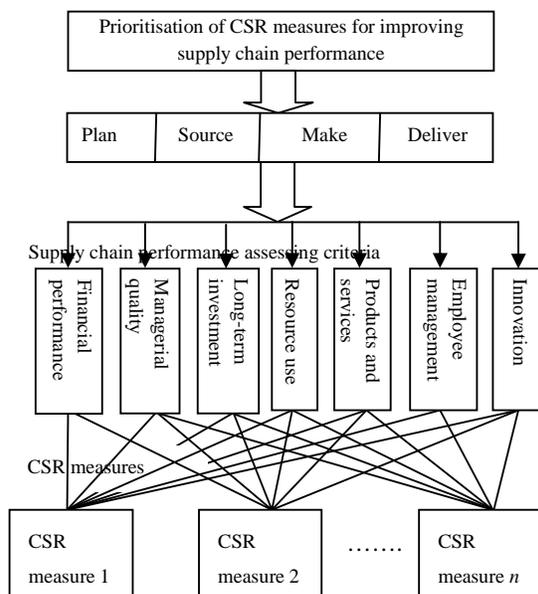
Figure 2. Evaluation framework using AHP and SCOR metrics

3.3   AHP

Analytic hierarchy process (AHP) is developed by Saaty [25] to structure complex multi-criteria decision making in business and it has been applied to many marketing and economic decision making situations [1,12,21]. With this method, a complicated system is converted to a hierarchical system of elements. In each hierarchical level, pair-wise comparisons of the elements are made by

using a nominal scale. These comparisons compose a comparison matrix. In order to find the weight of each element, or the score of each alternative, the eigenvector of this matrix is calculated. Consequently, this procedure provides an overall numerical ranking of available alternatives. The application of AHP to assess the CSR performance has gained more attention with the increasing significance of CSR management in supply chain and it is essential to identify the CSR performance measurement indicators among the candidates as a measure of core competency and competitive advantage of an organisation.

3.4   FEAHP

There are several fuzzy AHP methods explained in the literature [3,4,34]. This paper applies Chang's extent analysis method [3], since the steps of this approach are similar to the conventional AHP and are relatively easier than the other fuzzy AHP approaches. According to Chang's extent analysis method, the value of fuzzy synthetic extent is defined, using the standard fuzzy arithmetic, as below:

$$S_i = \sum_{j=1}^{m} M_i^j \otimes \left[\sum_{i=1}^{n} \sum_{j=1}^{m} M_i^j \right]^{-1} \qquad (1),$$

where the symbol $\otimes$ represents standard fuzzy operator. M_i^j is a triangular fuzzy number representing the extent analysis value for decision element i with respect to goal j and is the generic element of a fuzzy pair-wise comparison matrix like the one used in the AHP method. A triangular fuzzy number is defined to be a normal and convex fuzzy subset of X and denoted as M = (a, b, c) – has the following membership function [17]:

$$\mu_M(x) = \begin{cases} \dfrac{x-a}{b-a}, & a \le x \le b \\[2mm] \dfrac{c-x}{c-b}, & b \le x \le c \\[2mm] 0, & \text{otherwise.} \end{cases}$$

where the parameter 'b' gives the maximal grade of $\mu_M(x)$; the parameters 'c' and 'a' are the upper and lower bounds that limit the field of possible evaluation.

The degree of possibility of $S_1 \ge S_2$ is defined as:

$$V(S_1 \ge S_2) = \sup_{x \ge y}[\min(\mu_{M_1}(x), \mu_{M_2}(y))]$$

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and can be equivalently expressed as follows:

$V(S_1 \geq S_2) =$

$$\text{hgt}(S_2 \cap S_1) = \begin{cases} 1, & \text{if } b_1 \geq b_2 \\ 0, & \text{if } a_2 \geq c_1 \\ & \quad (2) \\ \dfrac{a_2 - c_1}{(b_1 - c_1) - (b_2 - a_2)}, & \text{otherwise} \end{cases}$$

The degree of possibility for a convex fuzzy number to be greater than k convex fuzzy number S_i ($i = 1, 2,\ldots, k$) can be defined by
$V(S \geq S_1, S_2,\ldots, S_k) = V[(S \geq S_1) \text{ and } (S \geq S_2) \ldots \text{ and } (S \geq S_k)] = \min V(S \geq S_i)$, $i = 1, 2, 3,\ldots, k$.
$$(3)$$

Assume that $d'(S_i) = \min V(S_i \geq S_k)$, for $k = 1, 2,\ldots,n$; $k \neq i$. Then the weight vector is given by
$W' = (d'(S_1), d'(S_2),\ldots, d'(S_n))^T$
Via normalization, the normalized weight vectors are
$W = (d(S_1), d(S_2),\ldots, d(S_n))^T$
where W is a non-fuzzy number. Compared to conventional AHP, the fuzzy extended AHP approach allows a more accurate description of the decision-making process.

4.   A case study in food supply chains

In this section, a case study is conducted to demonstrate the application of the above fuzzy AHP approach to prioritize CSR measures that are concentrated on their link with the SC performances. As follows are outlined the steps to prioritize CSR measures according to their relative importance of contribution to SC performances.

1. Identifying CSR measures: a list of CSR measures provides the evaluation points that are evaluated against the hierarchy.

2. Pair-wise comparison of decision-making: according to the constructed hierarchical structure as shown in Fig. 2, the SC performance assessing criteria are compared in pair-wise with respect to SC performance and CSR measures are compared in pair-wise with respect to the comparative assessing criteria.

3. Prioritization of IC measurement indicators: the fuzzy AHP is used to synthesize the data using Chang's extension method to arrive at a prioritized list of CSR measures according to their relative importance to satisfy the goal.

4.1.   Identification of CSR measures

There were a significant number of reporting mechanisms guidelines and standards, such as FTSE4 Good Index, SA8000 standards, Global Reporting Initiative's Sustainability Reporting Guidelines, and Account Ability's AA1000 standard. Tyagi et al. [33] identify the significant corporate social responsibility (CSR) issues and to analyse the interaction among them in order to improve supply chain performance system of an organisation. Common CSR actions include environmental sustainability, community involvement, and ethical marketing, which cover almost all issues like the inequality of employment; environmental impact; involvement in local community; the use of child labour; falsely advertise to potential consumers; and working conditions for employees [26].
$$(4)$$

Considering the complex characteristics of food supply chains to meet various challenges in implementing CSR, Maloni and Brown [19] listed (5) eight areas of responsibility. The list illustrates the complexity of CSR. A number of researches have already adopted the above elements to discuss how to deal with CSR in food supply chains [20,35]. Forsman-Hugg et al. [10] applied a qualitative research approach and identified seven key dimensions of food chain CSR: environment, product safety, corporate nutritional responsibility, occupational welfare, animal health and welfare, local market presence and economic responsibility. The results provide food and agribusiness companies with a better understanding of core CSR issues and their relevance in complex chains and networks. This study combines the elements described by previous studies [19,20,35] and lists six areas of responsibility as CSR measures into the totality of performance in food SC. It includes:

(1) Environment;

(2) Health and safety;

(3) Animal welfare;

(4) Occupational welfare;

(5) Economic responsibility; and

(6) Community.

4.2.   Pair-wise comparison of decision-making

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Five managers in food industry were invited to be decision-makers in a pair-wise comparison-based survey instrument. The CSR measures and performance criteria are compared in pair-wise by each group member for their relative importance with respect to each supply chain performance assessing criterion using words such as Equally, Weakly, Moderately, Strongly, and Extremely. In an attempt to avoid discrepancies occurring, the authors carefully explained the definition of terms and the required procedure to the decision-making group. The triangular fuzzy conversion scale used to convert such linguistic values such as just equal, equally, weakly, moderately, strongly, and extremely into fuzzy scales in the evaluation model of this paper is shown in Table 1.

Table 1 Triangular fuzzy conversion scale (Chang, 1996).

Linguistic scale	Triangular fuzzy scale	Triangular fuzzy reciprocal scale
Just equal	(1, 1, 1)	(1, 1, 1)
Equally important	(1/2, 1, 3/2)	(2/3, 1, 2)
Weakly important	(1, 3/2, 2)	(1/2, 2/3, 1)
Moderately important	(3/2, 2, 5/2)	(2/5, 1/2, 2/3)
Highly important	(2, 5/2, 3)	(1/3, 2/5, 1/2)
Extremely important	(5/2, 3, 7/2)	(2/7, 1/3, 2/5)

Taking the data entered by respondent one as an example, the fuzzy pair-wise comparisons among the criteria are shown in Table 2.

Table 2 Fuzzy pair-wise comparisons among the assessing criteria.

	AC1	AC2	AC3	AC4	AC5	AC6	AC7
Financial performance (AC1)	(1,1,1)	(3/2,2,5/2)	(2/5,1/2,2/3)	(1/2,1,3/2)	(1,3/2,2)	(3/2,2,5/2)	(1/2,1,3/2)
Managerial Quality (AC2)	-	(1,1,1)	(1/3,2/5,1/2)	(2/5,1/2,2/3)	(1/2,2/3,1)	(1/2,1,3/2)	(1/3,2/5,1/2)
Long-term investment (AC3)	-	-	(1,1,1)	(1,3/2,2)	(1,3/2,2)	(2,5/2,3)	(1/2,1,3/2)
Resource use (AC4)	-	-	-	(1,1,1)	(1/2,1,3/2)	(3/2,2,5/2)	(1/2,2/3,1)
Products and services (AC5)	-	-	-	-	(1,1,1)	(1,3/2,2)	(1/3,2/5,1/2)
Employee management (AC6)	-	-	-	-	-	(1,1,1)	(2,5/2,3)
Innovation (AC7)	-	-	-	-	-	-	(1,1,1)

Then Chang's extension method is used to synthesize the data. The values of fuzzy synthetic extents with respect to the assessing criteria are calculated.

$$\left[\sum_{i=1}^{n}\sum_{j=1}^{m}M_i^j\right]^{-1} = [(1, 1, 1) + (3/2, 2, 5/2) + (2/5, 1/2, 2/3) + \ldots + (1, 1, 1)]^{-1} = (42.5, 56.5, 75.3)^{-1} = (1/75.3, 1/56.5, 1/42.5) = (0.0133, 0.0177, 0.0235);$$

$$\sum_{j=1}^{m}M_1^j = (1, 1, 1) + + (3/2, 2, 5/2) + (2/5, 1/2, 2/3) + (1/2,1,3/2) + (1,3/2,2)+ (3/2,2,5/2)+ (1/2,1,3/2) = (6.4,9.0,11.6),$$

$$\sum_{j=1}^{m}M_2^j = (3.5, 4.5, 5.8), \quad \sum_{j=1}^{m}M_3^j = (8.5, 11.5, 14.5),$$

$$\sum_{j=1}^{m}M_4^j = (6.2, 8.3, 11.5), \quad \sum_{j=1}^{m}M_5^j = (5.0, 6.7, 9.5);$$

$$\sum_{j=1}^{m}M_6^j = (5.3, 6.6, 8.8); \quad \sum_{j=1}^{m}M_7^j = (7.6, 9.9, 13.5);$$

The different values of fuzzy synthetic extent with respect to the seven different criteria are calculated by Eq. (1):

$S_1 = (6.4,9.0,11.6) \otimes (0.0133, 0.0177, 0.0235) = (0.085, 0.159, 0.274)$

$S_2 = (3.5, 4.5, 5.8) \otimes (0.0133, 0.0177, 0.0235) = (0.046, 0.079, 0.137)$

$S_3 = (8.5, 11.5, 14.5) \otimes (0.0133, 0.0177, 0.0235) = (0.113, 0.203, 0.341)$

$S_4 = (6.2, 8.3, 11.5) \otimes (0.0133, 0.0177, 0.0235) = (0.082, 0.147, 0.271)$

$S_5 = (5.0, 6.7, 9.5) \otimes (0.0133, 0.0177, 0.0235) = (0.066, 0.119, 0.223)$

$S_6 = (5.3, 6.6, 8.8) \otimes (0.0133, 0.0177, 0.0235) = (0.070, 0.116, 0.207)$

$S_7 = (7.6, 9.9, 13.5) \otimes (0.0133, 0.0177, 0.0235) = (0.101, 0.175, 0.317)$

The minimum of the degrees of possibility can be determined by Eq. (2) and (3):

$V(S_1 \geq S_2) = 1$, $V(S_1 \geq S_3) = 0.785$, $V(S_1 \geq S_4) = 1.0$, $V(S_1 \geq S_5) = 1.0$. $V(S_1 \geq S_6) = 1.0$.
$V(S_1 \geq S_7) = 0.914$.

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Similarly, the rest of the minimum of the degrees of possibility can be determined. Hence, $d'(S_1) = \min V(S_1 \geq S_2, S_3, S_4, S_5, S_6, S_7) = 0.785$, $d'(S_2) = 0.164$, $d'(S_3) = 1$, $d'(S_4) = 0.737$, $d'(S_5) = 0.567$, $d'(S_6) = 0.521$, $d'(S_7) = 0.878$. These yield the following weights vector:
$W' = (0.785, 0.164, 1, 0.737, 0.567, 0.521, 0.878)^T$

After normalizing W', the weights of assessing criteria for Financial, Managerial, investment, Resource use, Products and services, Employee management and Innovation are calculated for respondent one and the results are obtained below by taking the geometric mean of individual evaluation of the five respondents:
$W = (0.173, 0.051, 0.221, 0.147, 0.145, 0.102, 0.161)$

Next, the CSR measures are evaluated pair-wise with respect to each assessing criteria. The same calculations are performed for the other CSR measures and these yield a weights vector. Via normalization, the weights of CSR measures with respect to the assessing criterion Financial performance are obtained after taking the geometric mean of the individual evaluation of the respondents:
$W = (0.216, 0.165, 0.102, 0.183, 0.166, 0.138)$.
The calculations of the weights of all CSR measures with respect to the other criteria will not be given because they are similar.

4.3. Prioritization of CSR performance metrics

Finally, the final weights of all CSR measures with respect to SC performance are obtained by multiplying the weights of an assessing criterion with its corresponding weight along the hierarchy (as shown in Table 3).
$W = (0.149, 0.260, 0.094, 0.166, 0.215, 0.113)$.

Table 3 Overall weights of CSR measures in food supply chain.

Assessing criteria / CSR measures	AC1	AC2	AC3	AC4	AC5	AC6	AC7	Weights
	0.173	0.051	0.221	0.147	0.145	0.102	0.16	
Environment	0.216	0.205	0.157	0.107	0.162	0.133	0.08	0.149
Health and safety	0.165	0.323	0.35	0.194	0.252	0.308	0.25	0.260
Animal welfare	0.102	0.107	0.056	0.096	0.102	0.164	0.08	0.094
Occupational welfare	0.183	0.083	0.136	0.24	0.078	0.075	0.28	0.166
Economic responsibility	0.196	0.164	0.197	0.238	0.24	0.228	0.22	0.215
Community	0.138	0.118	0.104	0.125	0.166	0.092	0.05	0.113

The proposed model therefore provides a critical link of SC performances to the intangible resource inputs by ranking the CSR measures within each assessing criterion according to their relative importance of contribution to the overall performances of SC. All the intangible resources necessary to improve the overall performances of SC are identified and visualized in the form of a context specific distinction tree as shown in Fig. 3.

The number of food scandals has been on the rise in recent years in Taiwan. In 2104, a food company was found that in the six months from February, had purchased 243 tonnes of tainted oil - collected from cookers, fryers and grease traps - from an unlicensed factory and mixed it with lard oil for sales. A total of 782 tonnes of such oils had been produced and sold out to its customer's islandwide. At least 1,256 businesses were affected in the gutter oil scandal. Taiwan's government is planning to increase fines tenfold for food safety violations and raise the maximum prison term to seven years, as well as offering whistle-blowers more rewards in the wake of the case -- the second food safety scandal to hit the island in less than a year. Last December a Taiwanese factory owner was sentenced to 16 years in prison for selling olive oil adulterated with cheap cottonseed oil and a banned colouring agent, following a mass recall [9]. According to the latest survey released in term of health, a majority of Taiwan's public are highly concerned about the problems of food safety. Food safety has once more become a primary concern in Taiwan in the wake of cooking oil found with illegal additives. This study not only reflects the facts of why the public worry about food products sold in the market but also discusses what the CSR measures should be implemented to assure food safety. The case study focused on food SC.

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Differences across industries and sectors were not taken into account in this study. We still think the

article provides valuable insights.
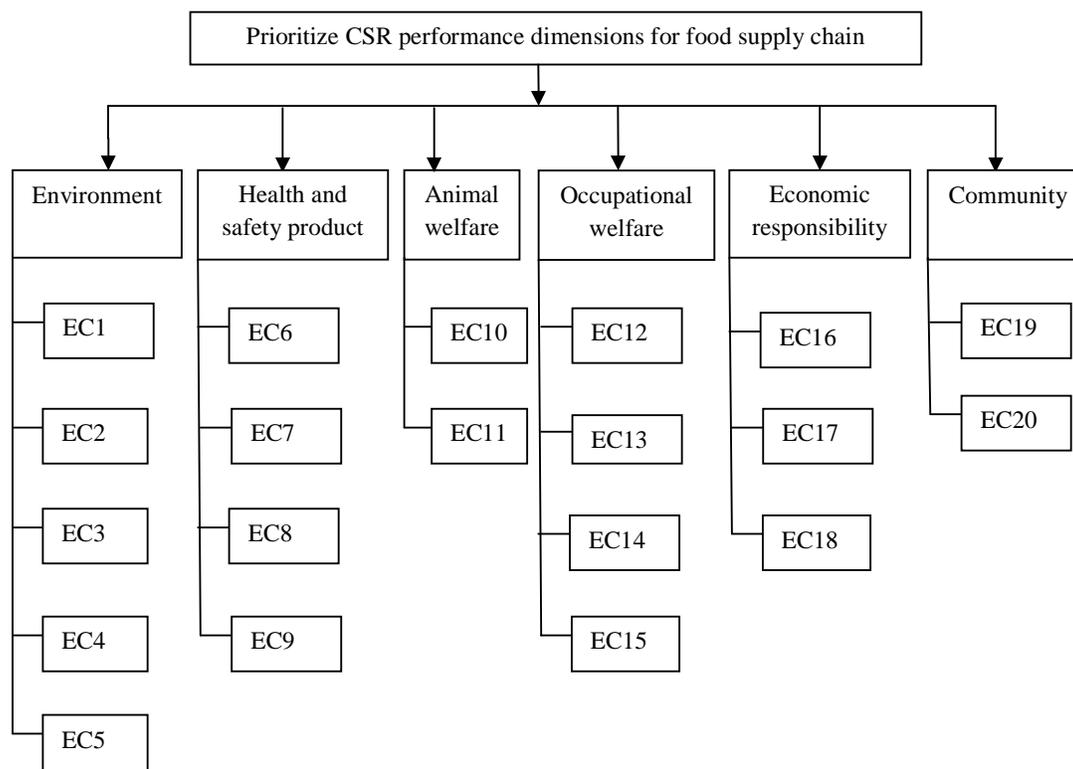
Figure 3. The distinction tree.

EC1: Environmental impact
EC2: Ecology impact
EC3: Energy consumption
EC4: sustainable cultivation and soil productivity
EC5: Domestic food and energy
EC6: Healthy/health products
EC7: Safe product for consumers
EC8: Traceability of the chain
EC9: Detailed product information on the package
EC10: Treatment of animal welfare
EC11: Animal conditions

EC12: Labour welfare
EC13: Welfare of farmers
EC14: Equality of employees in different countries
EC15: Working environment
EC16: Economic efficiency for company and
         stakeholders
EC17: Fair trade
EC18: procurement
EC19: National and cultural identity
EC20: Create welfare by providing jobs to
         community

It ensures that CSR management team has the same understanding of CSR contribution to SC performances for developing SCM strategies. By adjusting the degree of openness of its environment, the company can determine the intensity degree of satisfaction of CSR expectations, rather than in favour of certain CSR measures more than others.

5.   Conclusion

CSR continues to gain high regard by scholars and stakeholders. Nevertheless, few applicable models have been addressed that concentrates on CSR management, even though it has been recognized to be crucial, for the performances of SC. SC performance assessment has become one of the most important challenges for many companies to develop new strategies which could help to improve their SC performances within the limited resources. A decision model of SC performance, adopted from SCOR model, linking to the constructed CSR measurement of a SC is proposed.

AHP method integrated with fuzzy approach is used to develop a hierarchical structure for prioritizing the CSR measurement indicators in a SC as a better comprehension of the critical intangible assets with the manifestation in activities according to their relative importance of contribution to overall SC performances ultimately. Based on this coherent model for CSR evaluation for SC performance it would be possible to predict the consequences of the decisions made based upon the information provided by SC assessment, such as re-allocation resources. A visualized form of a context specific distinction tree is developed based on the proposed model to facilitate the understanding of what resources are actually important for the overall performances. An illustrative example is provided of the proposed model in food SC. Although the CSR measures may be affected by the contingent factors of different SC, it is the adaptation of the CSR evaluation model to those factors for the assessment of their performance contribution in a SC. It would certainly go a long way towards addressing a number of criticisms of CSR aspects of SC. However, with the research supporting the value of CSR measurement indicators should continue to be considered the important facilitators of SC. The coherent model for CSR assessment could thus provide an insight into the improvement of the development and application of CSR reporting for SC performances.

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