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## **Formation of socially responsible supply chain management based on a balanced scorecard**

**Abstract**

The article is devoted to the substantiation of practical issues of implementing the principles of social responsibility in the company. An important part of any company's business is supply chain management. In modern business, this is a comprehensive activity for managing all incoming and outgoing flows of company resources. Implementation of supply chain management on the principles of social responsibility is possible only on the basis of a consistent and integrated approach. The article substantiates the possibility of introducing the principles of social responsibility in the activities of the company based on a balanced scorecard. The balanced scorecard includes four blocks: finance, customers, personnel, and internal business processes. Each block includes a specific list of indicators, which assess the degree of implementation of the principles of social responsibility. A system of specific indicators for companies that manufacture, supply and install climate equipment is proposed: Finance (level of profitability; turnover growth; amount of Freon used (reuse); the amount of a modern group of environmentally sustainable fluorine-free refrigerants used; reuse of materials and assessment of their value; etc.); Customers (percentage of safe refrigerants used in products; percentage of customer refusals from cooperation; percentage of regular customers (more than 2 transactions; more than 1 year of cooperation; etc.); Personnel (the volume and share of expenses for employees' certification; volumes and share of expenses for personnel development; volumes and share of expenses for stimulating employees); Internal business processes (accelerated service operations; reduction of time for placing orders; reduction of spoilage and waste; reduction of equipment maintenance and repair costs; reduction of time and costs of transportation operations; use of automated warehouse management systems; use of alternative energy sources; etc.). The proposed balanced scorecard allows the company to really build a green supply chain, which is an important competitive advantage.

**1 Introduction**

In the modern context, the social responsibility concept is becoming an integral feature of the business management system in all areas of economic activity. Supply chains management (SCM) is an integral part of any business. SCM includes many points and aspects, such as assessing the market capabilities and needs, searching and evaluating possible suppliers, evaluating logistics, and transport corridors. The SCM practice and theory is being improved every

year. New approaches and instruments, which can have a beneficial effect upon the environment and on the society as a whole, are being developed.

SCM has some specific features in various areas of economic activity. The area of consumer goods' production and sale has its own principles and laws that describe impact on consumers. The industrial production area has its own marketing and sales channels, advertising and pricing policies. The social responsibility organization in the field of building infrastructure facilities has a number of features due to its dependence on state economic

**Keywords**

social responsibility; corporate social responsibility; supply chains; supply chains management; balanced scorecard

**JEL:** Q12; Q18

regulation, high business risk, financial instability, and significant dependence on suppliers, and other organizations in the building industry. In addition, the area of production and sale of ventilation and air-conditioning equipment (HVAC) is very specific, and thus it requires using certain controls and specific features.

## **2 The analyses of the latest researches and publications**

The term "supply chain management" actually it is the main one in the modern economic science and practice. In this term emphasis was made not only on the movement of resources, but rather on the logical chain building for such movement. As M. Christopher and D. Ivanov emphasized, "Supply chain management builds upon this framework and seeks to achieve linkage and co-ordination between the processes of other entities in the pipeline, i.e. suppliers and customers, and the organization itself" (M. Christopher, 2005; D. Ivanov, 2010). A. Gunasekaran has worked on the measurement and evaluation of building a single end-to-end supply chain [3]. The in-depth studies of strategic management, planning, and operational management in the supply chain have become more intensive (Harrison T. P. (2005) [4]); (Chopra S., Meindl P. (2007) [5]); (Chopra S., Meindl P. (2016) [6]). The studies of the role of Supply Chain Management in global value chains are even more relevant. For instance, Marko Miljkovic and Jelica Petrovic-Vujacic presented results of studies of the SCM role as a driver for building global value chains and spreading financial flows [7].

It is necessary to note that, despite the widespread and substantiated CSR concept in economic theory and practice, its aspects in supply management still are not stressed enough. There can be noticed only some occasional statements about the need to take into account the environmental impact, CO<sub>2</sub> reduction, etc. However, in modern conditions, there is a clear need to justify including the social responsibility aspects in the company's entire supply management system. The problems related to the formation and features of the socially responsible supply management concept and its place in the CSR system require undertaking a more in-depth research.

## **3 The aim of the article**

The purpose of the article is to justify the methodology for introducing the principles of social responsibility in the company's activities based on a balanced scorecard.

## **4 The presentation of results**

The implementation of social responsibility SCM helps to improve the quality of business management, strengthen the company's image, and improve the reputation, financial performance, and so on. Today, in the world context, the social responsibility SCM serves as a practical expression of the external component in the social responsibility concept for business. In the field of building infrastructure facilities, SCM is associated with the organization of the search process for suppliers of necessary materials, accessory parts and components, transportation, mounting and installation of equipment, with advertising and product sales. The social responsibility SCM concept in the field of production and sale of ventilation and air conditioning equipment (HVAC) is a combination of targeted and fundamental principles of the company management, and, primarily, the priority of sustainability principles in the production, delivery, and sales.

Overall, it is worth noting that in the developing countries the social responsibility concept is not a priority for business development. AzCond Company operates in such a market where the availability of social responsibility reports gives no incentives at all [8]. Basing on this, we have analysed the conditions for business in the Asian region of the FSU. In this region, there are small countries where no social responsibility programs are present, or there have been developed declarative approaches only. Overall, the business in this region adheres to the corporate social responsibility principles based on the managements' desire to support the social environment and ecological environment. Very few companies report corporate social responsibility and even fewer take into account the social responsibility of supply chains (Table 1).

As you can see, only few companies in the selected countries submit the reports for consideration and verification. In some countries, companies are only registered in the system, but there is no reporting on how the social responsibility principles are implemented. For the most part, in the developing countries the companies submitting non-financial reporting frequently work with the markets of the developed countries where the requirements for the availability of such reporting are quite tough. Therefore, among the selected countries, all companies that are registered and verified within the Global Reporting Initiative (GRI) framework operate in large markets and are participants in the supply chains where powerful companies from the developed countries are capable to dictate their working conditions. Overall, in this situation, this is very probable that the strongest supply chains player will dictate one's

TABLE 1 Dynamics of the Number of Companies Verified in the GRI system

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total Registered Companies
Azerbaijan	0	0	0	0	0	0	0	0	0	0	1
Georgia	1	1	1	1	1	1	1	1	1	0	2
Kyrgyzstan	0	0	0	0	0	0	1	1	1	0	1
Kazakhstan	0	2	2	2	4	2	3	3	3	1	6
Uzbekistan	0	0	0	0	0	0	0	0	0	0	1
Armenia	0	0	0	0	0	0	0	0	0	0	0
Uzbekistan	0	0	0	0	0	0	0	0	0	0	0
Turkmenistan	0	0	0	0	0	0	0	0	0	0	0

Note: completed by the author based on [9]

own terms on the market and working conditions.

Having analysed the companies' structure from selected countries, we can notice that the companies working with European markets with high requirements are among the most active in this market. It is worth noting that among the companies in Azerbaijan; only one company is registered in this system, and, at the same time, does not submit reports on social responsibility. This is SOCAR Company operating in the energy market. Overall, among the verified companies in the selected region, the situation is as follows: six companies operate in the energy market, two in the extractive industries; one is a non-profit organization, one is a financial organization, and one company operates within the system of British American Tobacco in Uzbekistan. All these companies have a high level of social responsibility and stimulate for completing such reports in their units [9].

Considering SCM as a market management concept in the companies involved in the production and installation of HVAC equipment, it should be noted that it is necessary to use the program-targeted method in order to improve the management process efficiency. Practical procurement activities are concentrated in the development of comprehensive programs for the production and sales at selected segments of building products, works, and services. The comprehensive programs are developed taking into account the company's long-term orientation, and thus they include a set of time-consistent models for forecasting the future market development and the companies' implementation of strategic, tactical, and operational plans. Like any comprehensive program, the SCM plan has a targeted orientation. The activity objectives, if present, allow creating favourable conditions for the concept formation. The SCM concept of socially responsible services is an integrated, customer-oriented business philosophy.

In the investment and building complex, the

production concept (or the production-improving concept) has received the highest development; mass production of goods and their sales at low prices are ensured within it. In this case, the company's management is making efforts to ensure large serialization and sales of goods through different points of sale. Application of this concept occurs when:

- the main part of real and potential consumers in the market has a limited, small income;
- the demand for this product exceeds supply, and thus some consumers who do not like the offered product still buy it thereby satisfying their needs for a short time;
- in the conditions of production processes, especially for new products, the cost is high, but it is necessary to find a way to quickly reduce it in order to achieve the necessary market share.

Adding the principles of social responsibility at the strategic management level means choosing socially oriented objectives. This is very important for the company's mission choosing only environmentally sustainable materials and substances. Achieving competitive advantages in the market should be based on forming the company's good business reputation, which will be facilitated by a whole range of factors: trust of consumers and business partners, socially-oriented management of the company and personnel; participation in socially significant actions and processes in society.

Understanding modern realities forces the business environment to make changes in approaches to SCM in the economic activity system. Social responsibility SCM may comprise company strategies, including various programs and projects, actions aimed at protecting the environment, and assistance in resolving other socially important issues. The content of international regulatory documents clearly regulates the issues of social responsibility, and thus the companies must follow

them in their activities if they want to be competitive not only at local level.

The objectives defined at the strategic level are further implemented at the SCM tactical level in the company. The balanced scorecard - BSC acts as an effective instrument to identify the efficiency of the company's strategy implementation, including social responsibility. In our opinion, the BSC system should be implemented with the aim to control the supply chain functioning based on the social responsibility principles. AzCond has implemented BSC indicators for its suppliers to ensure implementation of the social responsibility principles.

BSC (Balanced Scorecard) is a system for evaluating and measuring the achievement of the company's strategy objectives. It was developed by professors R. Kaplan and D. Norton from Harvard University. A feature of this approach is that in the context of achieving the company's strategic objectives, the evaluations of various aspects of the company's activities are made and synthesized. According to the approach developed by R. Kaplan and D. Norton, four key indicator systems are distinguished: finance, customers, personnel, and internal business processes. Relevant objectives are formulated for each of these blocks; a SWOT analysis is made; the indicators, cause and effect relations between all objectives and planned measures aimed at achieving the objectives are determined.

General BSC also highlights a system of the key performance indicators that are most important for the company - Key Performance Indicators (KPI). The advantage of this approach is complexity, since the main attention is focused not only on financial indicators, but also on other important indicators. Moreover, all indicators are considered and analysed in the relation and interdependence. This allows identifying the system dependencies, monitoring the achievement of key objectives, and making system decisions.

Each company in accordance with its characteristic features and specific objectives can adapt this general scorecard. The adoption of the social responsibility concept as the basis of its functioning should cover both the overall strategy and the entire operational activities of the company. When used, BSC allows tracking the processes of achieving socially important objectives, both in the external and internal activities of the company.

As of today, the trend to care for the environment has become even more intensive in the view of the exacerbating environmental problems related to basic human needs for high quality and clean food, clean environment, and clean air, which proved to be impossible to satisfy in full extent. Therefore, a promising area of the companies' activity is implementing the policies on sales of products that are most environmentally

sustainable and harmless to the human organism. In this context, it is important for the company to adopt the development strategy based on the principles of environmental sustainability, and its implementation at all stages: from developing a range of products, pricing, to promoting and marketing to the end consumer.

The need to strengthen the social and environmental responsibility of companies is due to the environment's rapid pollution and the natural resources' depletion. In the view of the people's increasing interest in improving the environmental living conditions, this is very important to spread the principles of openness and transparency on companies' activities. In the modern context, any information on the company's functioning should be available, including but not limiting to the environment. The interest of potential investors is frequently related to coverage of the company's impact on the environment, its social responsibility level, etc.; it is also associated with the company's good image, if present, and its competitiveness.

At the first glance, the HVAC equipment production and sales is an area where it is difficult to set the objectives that are compatible with the environment. Nevertheless, the world is moving towards the creation of such technologies and materials that have the least negative impact on the environment. To implement the development strategy for the company engaged in HVAC sales based on the social responsibility principles, we propose the following BSC:

- 1) Finance. The objective is achieving a stable financial condition based on the social responsibility principles. Indicators are displaying high level of profitability; turnover growth; amount of Freon used (reuse); the amount of a modern group of environmentally sustainable fluorine-free refrigerants used; reuse of materials and assessment of their value; the number of blast-heating apparatus used and energy savings; the number of environmentally sustainable boilers used, an assessment of their efficiency.
- 2) Customers. Objective is satisfaction of consumers' diversified needs by offering environmental products. Indicators are displaying percentage of safe refrigerants used in products; percentage of customer refusals from cooperation; percentage of regular customers (more than 2 transactions; service; more than 1 year of cooperation); assessment of design efficiency, and an individual approach to the cooling systems design.

Personnel. Objectives are the development and motivation of personnel, implementing the principles of trust, transparency, and protection of social interests. Indicators are displaying the volume and share of expenses for employees'

certification; volumes and share of expenses for personnel development; volumes and share of expenses for stimulating employees.

Internal business processes. Objective is to accelerate and increase the efficiency of all internal processes. Indicators are displaying accelerated service operations; reduction of time for placing orders; reduction of spoilage and waste; reduction of equipment maintenance and repair costs; reduction of time and costs of transportation operations; use of automated warehouse

management systems; use of alternative energy sources; disposal of old equipment; rising costs for pollution control equipment.

The conceptual BSC model for the HVAC Company for sales is presented in Figure 1.

A company is capable to clearly monitor the implementation of its development strategy, identify weaknesses, and consistently adhere to the social responsibility principles and objectives in its activities. This is fulfilled due to a constant monitoring of certain indicators and achieving the

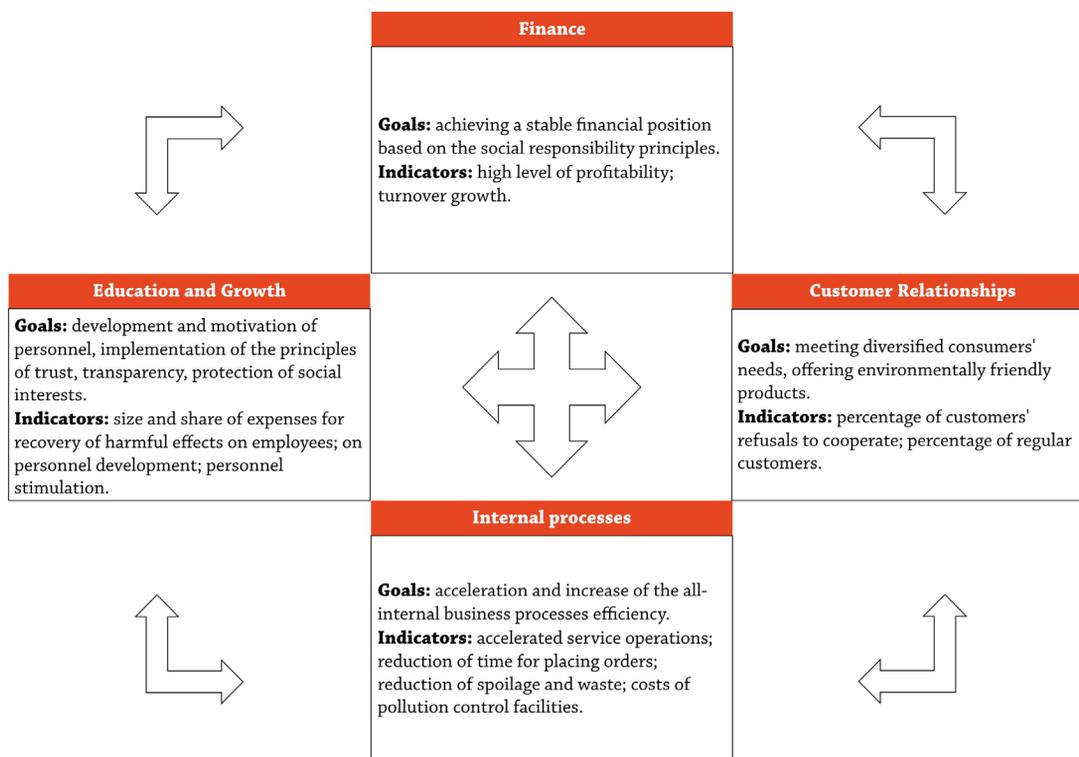


Figure 1 Balanced Scorecard Model for HVAC Manufacturers  
 Source: Developed by the author

set objectives in a single system. If the social responsibility is defined by a practical objective, then its principles should be adapted to all aspects of the company's activities, including SCM.

It is worth noting that SCM is not only a competition instrument, but also it is an intangible asset that is taken into account in the company's investment assessment. An important component of social responsibility SCM is the appropriate emphasis on the company's advertising campaign on environmental issues and the benefits of using the products that are least harmful to human health. A socially responsible advertising must necessarily be focused on transparently explaining to consumers the advantages and disadvantages of various products, in this case - HVAC. It also acts as a logical continuation of socially responsible planning of the company's product range.

A company that sets itself strategic objectives, and not just getting today's benefits, necessarily focuses on building sustainable trust from

consumers and partners. Building trust is a complicated, lengthy, and complex process that occurs in the process of compliance with all obligations, and not evading responsibility, accuracy, and transparency of their activities, and so on.

The existing trust in the company is becoming a powerful asset that brings long-term benefits. These benefits include: improving the quality of company management, strengthening the image, improving reputation, better the financial performance, etc. Thus, social responsibility SCM is a practical expression of the corporate social responsibility's external component of business. Thus, the company's high business reputation and the formed trust of consumers begin to act as a powerful competitive advantage.

Overall, the supply chains assessment is a component in the general structure of corporate social responsibility. At different stages of supply chains development, a company must evaluate different parameters accordingly with BSC.

Thus, at each stage of production activities a specific approach to assessing social responsibility is implemented; however, at each stage, the assessment should be based on a predefined BSC system. That is, at each stage, all companies that can be involved in sales should be evaluated according to this system, considering the company's characteristic features – either this is a supplier of finished products or components for their production.

The implementation of the social responsibility principles in social responsibility should consider the specifics of functions and activities of all departments. The basic ones are transportation (internal and external), procurement, inventory management, warehousing for logistics and transport service providers, resources, packaging, assembly, customer service - this is an obligatory set for each company. At the same time, the supply chains is formed both towards the company and away of the company, which requires consideration of all social responsibility aspects in the entire chain, including:

- organizational aspects;
- environmental aspects;
- ethical issues;
- human rights;
- labour protection and safety;
- relations with the staff members and society, etc. [10]

In fact, compliance with all corporate social responsibility requirements at all stages of developing a supply chain is one of the company's most important tasks. Some companies consider social activities as such, which lead to a rise in the final product cost and an increase in total costs. Nevertheless, this practice can stimulate innovations and employees' loyalty.

Most companies do not generate social responsible reports, only 31% of the world's companies generate a such report along with financial statements [11]. Overall, it is worth

noting that most companies agree on the need to integrate their non-financial reporting with financial reporting despite rather low indicators of the corporate social responsibility presence and its presence in SC.

Although, less than half of the companies around the world reported on sustainable development (or at least they have a plan to do it over the next five years), a thumping majority (57%) agreed that integration with financial reporting will be a necessary incentive to form non-financial reporting, and overall they agreed with its necessity in concept [11]. Overall, this concept is supported by 46% of companies in South America, 33% of companies in Asia, 27% in North America, and 26% of companies in Europe (Figure 2).

Moreover, now the developing countries' indicators on availability of non-financial reporting are in constant positive dynamics [11]. At the same time, the developed countries' indicators remain almost unchanged, although they are at a higher level.

Overall, at the present stage the developing countries do not form a targeted state policy regarding the business social responsibility. In these conditions, the social responsibility formation can be implemented as a result of the government's balanced policy, with the development of relevant mechanisms designated to stimulate and support business along this path. To some extent, the absence of such a program discourages the business.

Therefore, one of the companies' main tasks in building the supply chains is implementing environmental and social practices; another task is to form a consumer's confidence that social responsibility is implemented at all stages of the finished product's production - from the purchase of raw materials to delivery of the product to the store or a consumer.

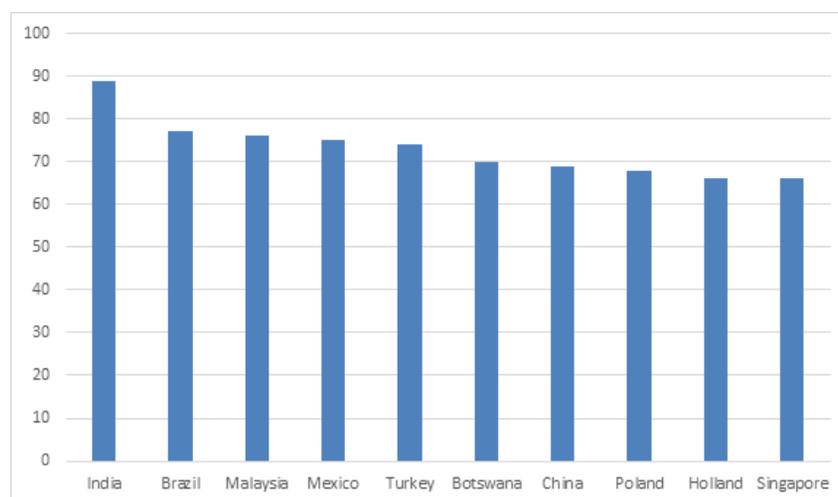


Figure 2 Share of the companies that agree with the idea of combining financial and non-financial reporting [11]

## 5 Conclusions

Thus, the key areas for forming of “green” supply chains are identifying the incentives and barriers for formation of the companies’ social responsibility and supply chains in a specific country or market; defining the indicators for assessing of the company’s and supply chains level of social responsibility; risk management and proactive approach to the supply chains formation; implementation and management of the corporate social responsibility principles in all stages of supply chains (i.e. from the moment when there appears an idea to produce a specific product until its disposal).

The proposed social responsibility SCM mechanism in the company considers the HVAC market characteristics, reflects the current state of affairs in the social responsibility values implementation in companies, formulates the further prerequisites for increasing the efficiency of procurement activities based on the principles of social responsibility in the conditions of socio-economic instability, the significant impact of crisis, and large amount of internal and external risks and threats.

In order to implement the development strategy based on the social responsibility principles for HVAC companies, the following balanced scorecard was proposed: finance (objectives - achieving a stable financial condition based on the social responsibility principles; indicators - high level of profitability; growth in turnover; amount of Freon

used (repeated use); the amount of a modern group of environmentally sustainable fluorine-free refrigerants used; the reuse of materials and their assessment cost; the number of blast-heating apparatus used and energy savings; the number of environmentally sustainable boilers used, an assessment of their effectiveness); customers (objectives - meeting diversified consumer needs, offering environmental products; indicators - percentage of safe refrigerants used in products; percentage of customers refusing to cooperate; percentage of regular customers (more than 2 transactions; service; more than 1 year of cooperation); design efficiency assessment and an individual approach to the design of cooling systems); personnel (objectives - development and motivation of personnel, implementation of the principles of trust, transparency, social interests protection; indicators - the amount and share of expenses for employees certification; the amount and share of expenses for personnel development; the amount and share of expenses for stimulating employees); internal business processes (objectives - speeding up and improving the efficiency of all internal processes; indicators - speeding up service operations; decreasing time for placing orders; reducing spoilage and waste; reducing costs for equipment maintenance and repair; reducing time and costs for transportation operations; using automated warehouse management systems; using alternative energy sources; disposal of old equipment; increased costs for cleaning equipment).

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