Strategic Information System for Social Responsibility

Virginia López Nevárez[1] & Gisela Cota Yucupicio[2]

Abstract

Social responsibility can be integrated into business management through solidly developed conceptual and technological tools. In this sense, a strategic information system has been developed, its main contribution being the integration of socio-environmental indicators in software that implements cutting-edge information and communication technologies. To carry out the research, the methodology of the logical spiral of analysis, practice, synthesis and theory was applied. As a result, an information system was developed that allows the measurement of social responsibility under the criteria established by the Global Reporting Initiative.

Keywords: Social responsibility, information systems, indicators, measurement

Jel: C88, M14

1. Introduction

The United Nations (UN), has been calling on governments, business sector and civil society, in order to help expand access to energy, improve efficiency and increase the use of renewable energy; besides making good use of natural resources. In response, the business community has strengthened a relationship with the United Nations, which has resulted in a new standard of responsibility and cooperation for social benefit, which is pushing changes in paradigms, rules and behaviors.

The purposes of the companies have been questioned strongly in the last years, the actors of these have fixed their attention in the actions and the responsibility that they have before their demands. It is therefore considered that traditional management models need to evolve towards a new vision in which commitment to society and the environment have become the main reason for their activities (Farao & Viltard, 2011). Responding to the needs while avoiding damage to the interests of the groups is the challenge that companies are currently facing.

In this sense, companies are obliged to reconsider their position, having to establish new criteria to respond to the demands and aspirations of the different interest groups (stakeholders) in the scenario of the globalized economy, the knowledge society and communication (Duran, 2011). Stakeholders are defined as all those actors, people, groups, companies, community and society that have some interest or relationship in a company (Volpentesta, Chahín, Alcaín, Nievas, Spinelli, Cordero, Cortejarena & Greco, 2014).

CSR in companies must be integrated into the value chain and be an instrument in which the strategy can create competitive benefits by taking advantage of the resources and competences of its social performance (Barín, 2012; Husted & Salazar, 2006).

[1] Universidad Autónoma de Occidente, Blvd. Macario Gaxiola y Carretera Internacional, Los Mochis, México, vicky-academico@hotmail.com

[2] Universidad Autónoma de Occidente, Blvd. Macario Gaxiola y Carretera Internacional, Los Mochis, México, gisela.cota@udo.mx

For the evaluation of social action, it is pertinent to use CSR tools that integrate dimensions that ensure the effectiveness of the organization and the good relationship with its stakeholders (Camacho, Portales & García, 2012). In this sense, we must face the challenge of systematizing the information generated through indicators that allow the company to monitor its progress in terms of CSR and establish short, medium and long-term goals.

To take advantage of the potential of creating value from a CSR strategy, the company must make use of the information systems and be able to advance in the field and build a mapping that allows to relate the different components in a more precise and systematic way (Garriga & Melé, 2004).

Given this situation, it is vital to move towards new paradigms that go hand in hand with information and communication technologies, taking advantage of the benefits they offer for innovation in processes, as well as the facilities for the systematic management of information collection, analysis and dissemination. Permanent, accurate and timely to close to the company itself. In this sense, the research question has been posed: How to carry out the measurement in terms of social responsibility through a strategic information system that integrates the use of information and communication technology?

Corporate social responsibility is a fundamental factor in the XXI century (Windor, 2005), for this reason the focus of this information system is oriented to the fulfillment of the sustainable development objectives established by the UN through promoting social change with the use of Information and Communication Technologies (ICTs), for which it has set as its objective: to develop a strategic information system that allows measuring the performance of the company related to social responsibility.

The proposed strategic information system consists in evaluating companies with CSR practices, through a series of socio-environmental indicators based on the basic dimensions of the Global Reporting Initiative (GRI).

As Ramírez and Vega (2015) point out, the effective use of a technological platform allows to streamline administrative processes, as well as to redesign the relationships that it has with the organizational environment as other organizations, suppliers, customers, obtaining added value in their products or services. Undoubtedly, the proposed measurement of CSR management through a strategic information system based on technology, is an initiative to address social initiatives by participating in social change from the perspective of ICTs.

2. A Review of the Literature

2.1 Corporate Social Responsibility (CSR)

The CSR has been used as an explicit framework to better understand the relationship between business and society (Carroll, 2015). In this sense, the theories of CSR are constituted as the conceptual basis for the company that is interested in being socially responsible and needs to develop and have in a very clear policies and procedures of social responsibility. These theories define CSR practices and are organized into four. First, in that CSR is the means to obtain the profits, there is only commitment with the shareholders. Second, CSR emphasizes the political power of the company with society. Third, CSR implies the commitment of the company with all stakeholders. Fourth, the CSR defines the performance of the company as a citizen who has rights and obligations to society (Melé, 2008).

For the purposes of this research, corporate social responsibility is understood as a conscious and consistent commitment to fully comply with the purpose of the company both internally and externally, considering the expectations of all its participants in the economic, social or human and environmental, demonstrating respect for ethical values, people, communities and the environment and for the construction of the common good. Under this concept are included a set of business management practices, strategies and systems that pursue a new balance between the economic, social and environmental dimensions (CEMEFI, 2016).

Social responsibility, from a strategic perspective, can achieve the success of a company, and obtain a competitive advantage by creating a good reputation, which leads it to gain the trust of its internal and external collaborators, since it will be recognized for the quality of your products and services. In this regard, the strategy is seen as the creation of value and / or competitive advantages through the use of resources and skills to obtain a differentiated position in the market (Barín, 2012).

To integrate the company with society, it is necessary to look at the social problems and at the same time create value for themselves, as well as generate economic gains, that is, create a business model (Camacho, Portales & García, 2012). One of the ways in which the business model of the company includes the principles of social responsibility is that they work under norms and ethical principles established in the management tools, such as the GRI, ISO 26000, ETHOS, CEMEFI, which also makes the process of measuring CSR practices easier.

Measuring, guiding and ensuring that the improvement goes towards a specific objective, which implies defining and specifying the objectives of the company through ponderable values, that is, through indicators. A system of indicators is a set of values designed to measure certain specific variables, in order to verify that a company reaches the goals indicated in its strategy.

On one hand, the indicators are useful for making decisions in the company. On the other hand, they serve to communicate the results to the interest groups of financial and non-financial information. Nowadays, the most used way for the communication of non-financial information is the publication of CSR reports, as is done in the GRI. The Initiative of the Global Reporting Initiative (GRI) is an organization created in 1997 by the call of the Coalition of Economies Responsible for the Environment (CERES) and the Environment Program of the United Nations (UNEP). The GRI has developed the "Guide for the preparation of a sustainability report", its mission is to improve the quality, rigor and usefulness of the sustainability reports so that they reach a level equivalent to that of the financial reports. It is fundamentally based on the implementation of the triple balance: economic, social and environmental (GRI, 2016).

The standard is certifiable, although minor requirements can be met can be externally audited, or compliance can even be reported based on the GRI standard. Its strength is environmental content and has as an advantage a detailed description of the possible indicators to measure CSR in the organization. Another of its virtues is the ability to compare CSR reports between different companies and between different years, since companies usually design their own reports for their stakeholders, often not very comprehensible and with indicators that are not always comparable, verifiable or suitable to measure certain parameters of interest.

2.2 The Strategic Information Systems

The information system is integrated by a set of information management methods commonly linked to the automation of decision-making processes (Ramírez & Vega, 2015).

In order to achieve the desirable characteristics of the information system, the organization must generate its own knowledge in relation to the requirements and development of ad-hoc information systems that anticipate the information needs; thus constituting information systems as the cornerstone of organizational equilibrium.

The information becomes the main agent of the process, which must be processed in real time, so that decisions can be made at the required time, which is why it is important to recognize the potential of the automation of information systems as a decision support tool and as an organizational strategic resource, since nowadays any organization can make use of information technology and its applications.

In recent years it has been seen how the use of information technology has modified the forms of management in the company, through the automation of operational processes, which allows the collection, storage and retrieval of information in a more efficient way.

Automated information systems is the most representative form of the use of information technology in organizations. The point where the information system is linked to the technology is in the implementation stage, since it supports applications in storage, processes, automatic communications and access to the data that was previously stored in the devices. However, it must be considered that the influence of the technology ends up having the implementation of the information system is only circumstantial.

In the nineties, three technological improvements bring about a revolution in the scenarios of technological analytical applications, to give rise to the proposals of competitive intelligence (IC) (Petrini & Pozzebon, 2009): data warehouse technologies, ETL tools (extraction, transformation and loading) and the powerful end user analytical software with OLAP capabilities (Online analysis processing).

Likewise, the impact of the internet is undeniable, there are currently versions of web-based analysis products, internet or intranet connections, users that can investigate and analyze data from home, while traveling or from any other location. This has meant accepting the term competitive intelligence for strategic information systems and decision support, including a set of applications classified under three general themes: analysis (data mining and OLAP), monitoring (control boards, alert) and reports. It is important to keep in mind that the issue of competitive intelligence has a separation between the approaches: the managerial and the technical.

3. Methodological Framework Of The Research

The main objective of the methodological process that this research project pursues is innovation in software for the measurement of corporate social responsibility. The research revolves around an instrumental objective that is to obtain as a product software for registration, measurement and evaluation of CSR. In this sense, the procedural elements are developed through the logical spiral that goes from the analysis, to the design, development and approval of the prototype. The method designed for research is based on an approach at an organizational level, focusing on the understanding of organizational processes, limits and systems activity. For the collection of data, interviews, observation and documentary analysis were used.

4 Design of the Information System

4.1 Scope of the system

For purposes of ease of identification and identity projection of the strategic information system for corporate social responsibility, this has been named BEESOFT.

BEESOFT consists of a series of indicators used to measure corporate social responsibility within an organization, works under the following platforms: Windows 8, Windows Phone and Silverlight, the latter has the modality of running inside and outside the web browser and is divided into two parts, the part of capture and information consultation, being the other platforms (Windows 8 and Windows Phone) only information query. The indicators are the following:

- Environmental
- Economic
- Human rights
- Product liability
- Labor
- Social

4.2 Description of requirements

BEESOFT is a system that consists of measuring corporate social responsibility within an organization. Its components are the following: ADO.NET Entity Framework and WCF Data Service. ADO.NET Entity Framework: Represents the BEESOFT database and has the functionality to connect the application with the Microsoft SQL Server. WCF Data Service: It is the bridge of communication between the application and the database, it has registered the permissions on which tables are modified and read.

4.3 Dictionary of classes

ADO.NET Entity Framework: Entity Framework allows developers to create data access applications by programming with a conceptual application model instead of programming directly with a relational storage scheme. The goal is to reduce the amount of code and maintenance required for data-oriented applications. The Entity Framework applications offer the following advantages:

- Applications can work in terms of a more application-centric conceptual model, which includes types with inheritance, complex members, and relationships.
- Applications are free of rigid coding dependencies of a data engine or storage schema.
- Assignments between the conceptual model and the specific storage scheme can change without having to change the application code.

- Developers can work with a consistent application object model that can be assigned to various storage schemes, possibly implemented in different database management systems.
- Several conceptual models can be assigned to a single storage scheme.
- Compatibility with Language Integrated Query (LINQ) provides validation of the syntax at the time of compilation for queries in a conceptual model.

WCF Data Service: It is a component of the .NET Framework that allows you to create services that use Open Data Protocol (OData) to expose and use data through the web or an intranet using the representation state transfer semantics (REST). OData exposes the data as directional resources through uniform resource identifiers (URI). To access and change the data, the standard HTTP verbs GET, PUT, POST and DELETE are used. OData uses Entity Data Model entity-relationship conventions to expose resources as sets of entities that are related through associations. WCF Data Service also includes two sets of client libraries, one for general .NET Framework client applications and another specifically for Silverlight-based applications. These client libraries provide an object-based programming model when accessing an OData source from environments such as the .NET Framework and Silverlight.
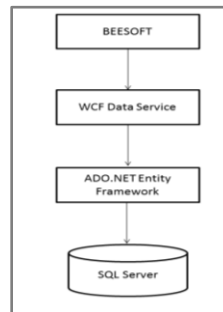
4.4 Class Diagram

Figure 1. Class Diagram

4.5 Software Architecture

The application is developed in a model based on layers, which corresponds logically to the representation of the links that the chain of operation in the software system implies. Silverlight Platform:Layers:

- SILVERLIGHT (XAP): exposes the graphic interface of the application.
- SERVICE: WCF services that provide access to the data.
- DATA: ADO model. NET ENTITY Framework, which is the connection to the database.

This architecture has the advantage of greater flexibility for future modifications, adjustments and maintenance. The SIE for CSR in its development phase, as a system uses the most sophisticated software quality standards.

4.6 Methods and Techniques

As a development language, C # was used, the programming methods implemented include all the object-oriented techniques, such as inheritance, polymorphism, property management, enumerations, methods, functions, events, as well as specific methods characteristic of the Microsoft Silverlight environment. Pages (XAML), WCF DATA SERVICE and WCF services, all these resources make the system a robust and stable program in terms of operation and improvements.

4.7 Software Used for Development
- Microsoft Visual Studio 2012, .NET FRAMEWORK 4.5: IDE for software development.
- Asp.Net: Technology of the .NET platform for the development of web applications and services.
- Microsoft SQL Server 2008 Management: database manager.
- Microsoft SQL Server 2008 Enterprise: database engine.

- Microsoft Visual C #: Programming language.
- Microsoft Office 2010: Development of software documentation.
- Operating System: Windows 7 Ultimate and Windows 8 Pro.

5. Strategic Information System for Social Responsibility

This strategic information system for measuring corporate social responsibility in an organization is based on the international GRI (Global Reporting Initiative) standard and evaluates companies in different areas such as: social, labor, economic, human rights, responsibility over products and environmental It consists of two parts: the management part of the indicators works only in Silverlight 5 for laptop and pc. The other part is to consult the indicators, works on Silverlight 5 for laptop and PC, Windows 8 and Windows PHONE 7.5.

5.1 CSR indicator management system

This section of the system consists in managing all the information related to social responsibility indicators and the practices that the company carries out. The operation of the CSR indicators management is explained below. Figure 5 shows the main menu of the management system.

Figure 2. Main menu.

Activities to be carried out in this management module:

- Signing up
- Modify an existing record
- Low records

In this section, the user has the option to enter the general data of the company, as well as to register the users that will use this software granting them permissions of use and other functions that are the basis for the management of CSR indicators. The user types are: Administrator (you have full control over the system), Employee (you can only save information in the indicators) and External (you can only check the indicator information). This system has a Modern UI design style, which means that its interface is intuitive to the user, easy to use and follows a standard in the management of all indicators, being the process of adding and modifying them all the same. Below are the 5 steps to register or modify a record visually, taking as an example the social dimension. Step1.Select the social dimension of the main menu

Figure 3. Social dimensio
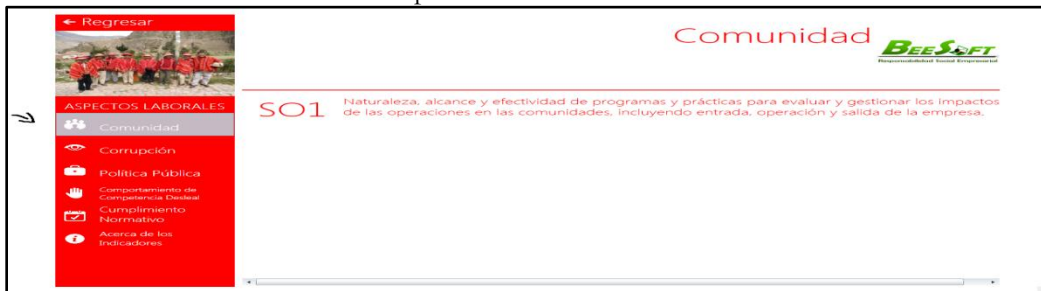
Step 2. Select the indicator

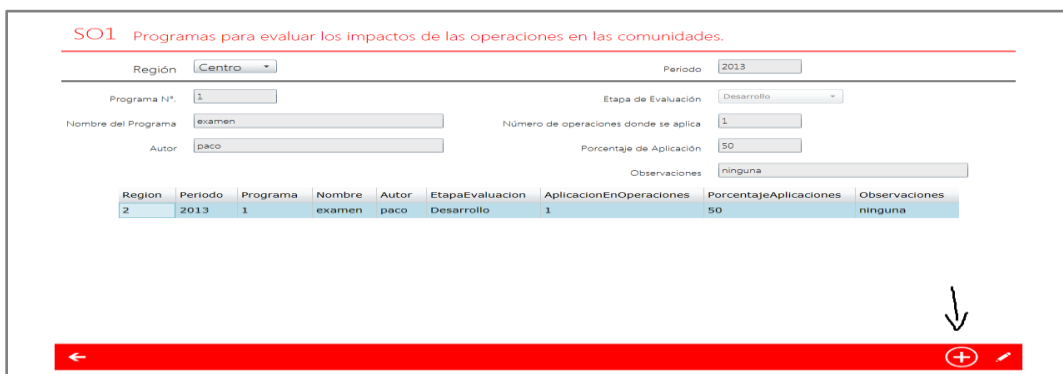Figure 4. Indicators of the social dimension

Step 3. Add new record

Figure 5. Add a new record in the social dimension (community indicator).
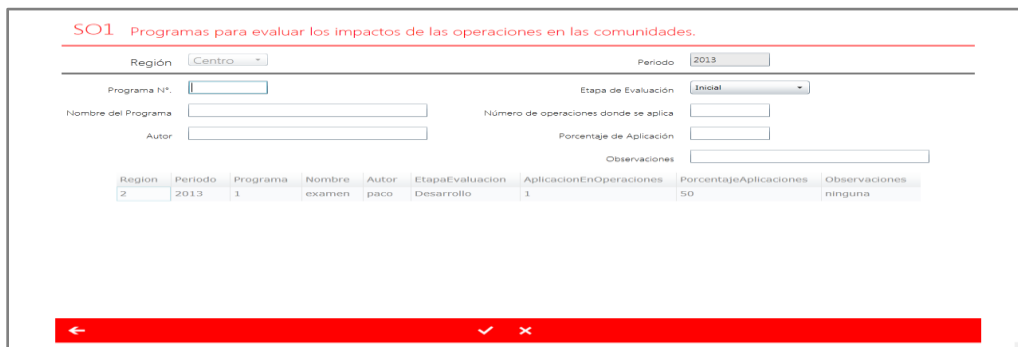
Step 4. Enter the data

Figure 6. Enter the data in the social dimension (community indicator).

Step 5. Save the information

Figure 7. Accept to save the information

5.2 System for Consulting CSR Indicators

The CSR indicators consultation system works on three Silverlight 5 platforms for laptop and pc (inside and outside the web browser), Windows 8 (for electronic tablets) and Windows PHONE 7.5 (for mobile devices). These three applications handle the Modern UI design style, which makes the end user more understandable and easy to use. They also use the same design standard in all three platforms, to whether the user will feel as if they were managing a single application on three different platforms.

5.2.1 Silverlight

This system developed on Silverlight has the functionality to run inside and outside the browser (both at the web level and at the desktop application level). The supported operating systems are Windows, MAC OSX and Linux. This module of the system is for information consultation, which is shown in the form of graphs of lines classified by periods, following the principles established by the GRI. Below is an example chart, obtained from the social dimension of CSR, specifically consulting the social programs that have been implemented.
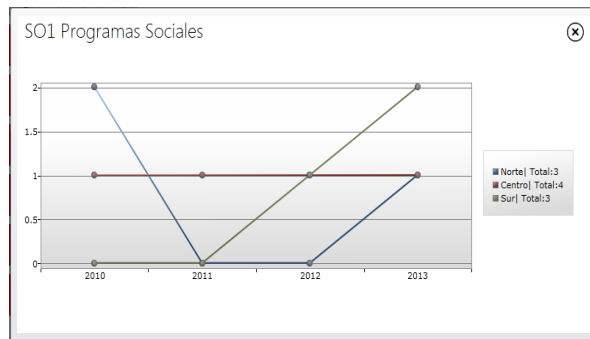

Figure 8. Graph of the social programs indicator

5.2.2 Windows 8

This module developed on Windows focused on electronic tablets. It is similar to the application in Silverlight and similarly applies the Modern IU design and follows a standard in all the consultation processes of the RSE indicators.

Figure 9. Social aspects in Windows 8

Figure 10. Graphic indicators of theSocial aspects in Windows 8

5.2.2 Windows PHONE

This is the application for consulting the CSR indicators for Smartphone, it uses the same design patterns and standards in the CSR indicator consultation processes.

Figure 11. Views of the application in Windows PHONE

6. Conclusions and Discussion

It is a complex task to integrate the principles of social responsibility to the daily practices of the organization, and it is even more so when it is done through an information system, although it can bring great benefits to the organization, achieve that it fulfills its objective in the Practice is not an easy task (Pachecho & Cruz, 2006). A system does not work on its own, a good implementation is based on the fundamental notion of evaluating the context, the structure and the management system, in order to generate knowledge that reduces the risks of operational failures.

The BEESOFT strategic information system previously described, is based on two axes of action: (1) articulate and communicate the social responsibility strategy and (2) regulate actions in relation to CSR, providing information for decision-making in the social strategy.

The GRI was resumed as a reference for the construction of the information system, since it constitutes the reference at an international level of greater incorporation in social reports (Gómez & Suárez, 2012). It is based on the implementation of the Triple Botton Line, considering the dimensions: economic, social and environmental; with the purpose of making public knowledge of the actions that reflect its commitment to the development of the community, the preservation of the environment and respect for the rights of stakeholders.

By using the GRI guide in the BEESOFT system, the company can know if it has covered the key issues that its stakeholders are interested in. The indicators and methods to define the information of the reports are accepted by the global experts in social responsibility (Ojeda &Jiménez, 2012).

BEESOFT has a set of social responsibility indicators linked together. Because these indicators must be fed by data, these are obtained in two ways: through connections to automatic interfaces to the local database and manual entries. An important challenge was the simplified storage of information, for which a multiplatform system was established as the operational base, which offers the advantage of eliminating spaces and physical barriers for the management of CSR.

The measurement achieved with BEESOFT of the social responsibility that a company has adopted can not be possible just by implementing the system, it requires an organizational structure supported by a social government that integrates CSR into its value chain. The support provided by information technologies is support, it is necessary to arrive at an alignment from the strategy to the operational base and associate systems of indicators and measures that lead to a management process based on corporate social responsibility.

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