Analysis of the sustainability management model in the productivity of small and medium enterprises. Case study in the city of Bogotá D.C.

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Abstract

Research conducted since the 1990s shows that the high failure and retention rates of small and medium-sized enterprises are due to administrative deficiencies and low technological adoption. Therefore, a possible solution to both low sustainability and low productivity may be the implementation of a sustainability management model that improves these indicators.
Sustainability and productivity are two terms that have taken great importance when involving the concept of organization, this concept has been becoming a major factor for companies because it involves each and every one of the different types of companies and business ideas that Colombia has, since sustainability is strongly related to entrepreneurship and globalization in order to create economic, environmental and social value in the present and future, according to this, the research aims to determine the level of productivity after the implementation of the Sustainability Management Model. The detailed review to identify its applicability in the SMEs, to define categories of analysis, the profiles of the organizations and to carry out the diagnosis of the organizational management, are the aspects to consider in this project.

Keywords
Productivity, management, sustainability, SME´s, multicriteria decision analysis

Introduction

Small and medium enterprises (SME's) in Colombia are the engine of business productivity. Various studies show the importance of these organizations in different sectors and the impact they have on the community and the productive environment in which they operate. On the other hand, different academic studies supported by the different associations have shown high rates of failure in keeping these organizations in the market due to administrative deficiencies and low technological adoption. Therefore, a possible solution to both the low sustainability and productivity, may be the implementation of a sustainability management model that improves these indicators (Figure 1).

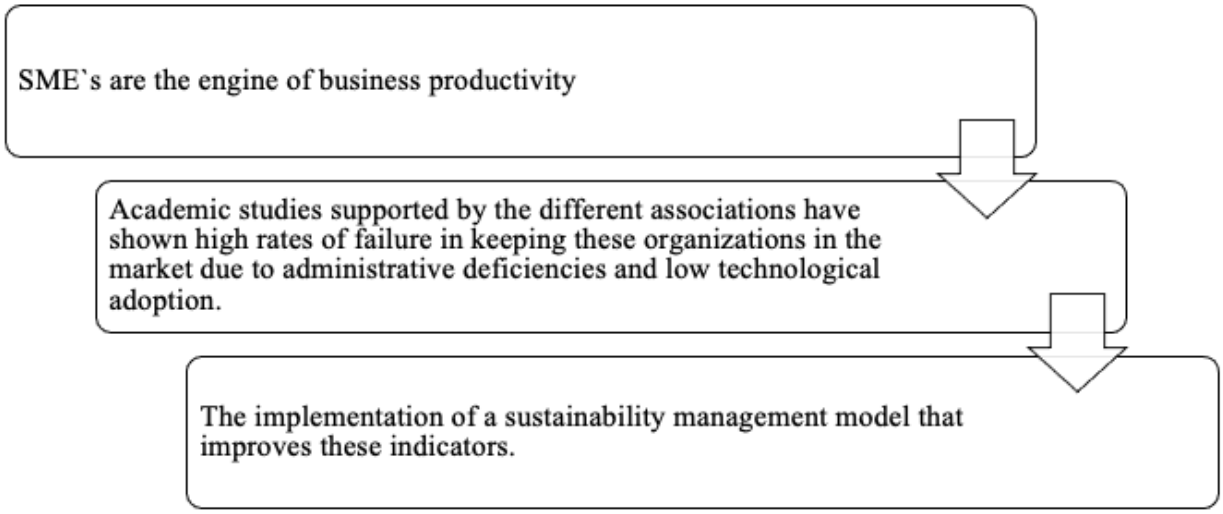

Figure 1. Relationship between SME´s and sustainability

Sustainability and productivity are two terms that have taken great importance when involving the concept of organization, besides being a factor in what refers to the economic development of the country, this concept has been becoming a major factor for companies because it involves each and every one of the different types of companies and business ideas that Colombia has, sustainability is strongly related to entrepreneurship and globalization in terms of creating economic, environmental and social value in the present and future. In accordance with this, the research aims to determine the level of productivity after the implementation of the Sustainability Management Model in small and medium enterprises in Bogota.

Background

SMEs and the sustainability concept

In the last few years it has been important if we talk about advances and the need to study what we call today SMEs, as well as all the actors and actions that allow this type of organization to be maintained over time and therefore be sustainable. Recent research shows that the term has become very important at the global level, and many countries have been concerned with studying and researching many factors that involve the term and the conception of SMEs as such. Based on studies carried out in previous years, product of a preliminary research focused on the sustainability model for a country like Colombia, Garzón Castrillón, (2015).

Garzón Castrillón, (2015) indicates the variables that give as result the instruments of the study, it is recognized that the sustainable development is the alternative that must be followed in opposition to the current model, thus some economic, social, cultural, political and ecological factors are defined. On the other hand, it defines key references of durability, business sustainability and interest groups. It also analyses the ecosystems of business and sustainable entrepreneurship, key conceptual tools for the design of strategies for sustainability. Similarly, it details the strategic management of people, leadership, organizational components, open innovation that drives sustainable development and finally public policies for sustainability in Colombia and its orientation to business (Garzón Castrillón, 2015).

Maussa Perez (2010), established an alternative model for business sustainability, which he wanted to propose after the liquidation of thousands of companies in 1990 with the reforms of the laws of the governments of Virgilio Barco and Cesar Gaviria and what he wanted was to see the management model of those companies that managed to stay and those that had to close, the relationship of this management in different fields gives a glimpse of the changes that are presented in the studied sector, besides putting in a context in which the Colombian companies have already traveled a difficult path where the conditions do not give wait and it is urgent to find a model or proposal that promotes durability.

According to Dolz et. al, (2013), the ambidextrous nature of organizations is a key factor in their ability to cope with the constant changes that SMEs continually face.

Finally, and in the interest of formulating strategies for sustainability (Cadena, Guzmán, Rivera, 2006), is it possible to measure business sustainability, where we can review other authors' approaches to the concept of sustainability in order to create hypotheses and verify or discard them.

On the other hand, some concepts related to methodologies and analysis techniques, and the concept of supply chains are analyzed in order to provide an illustration in the terms used in the research (Figure 2).

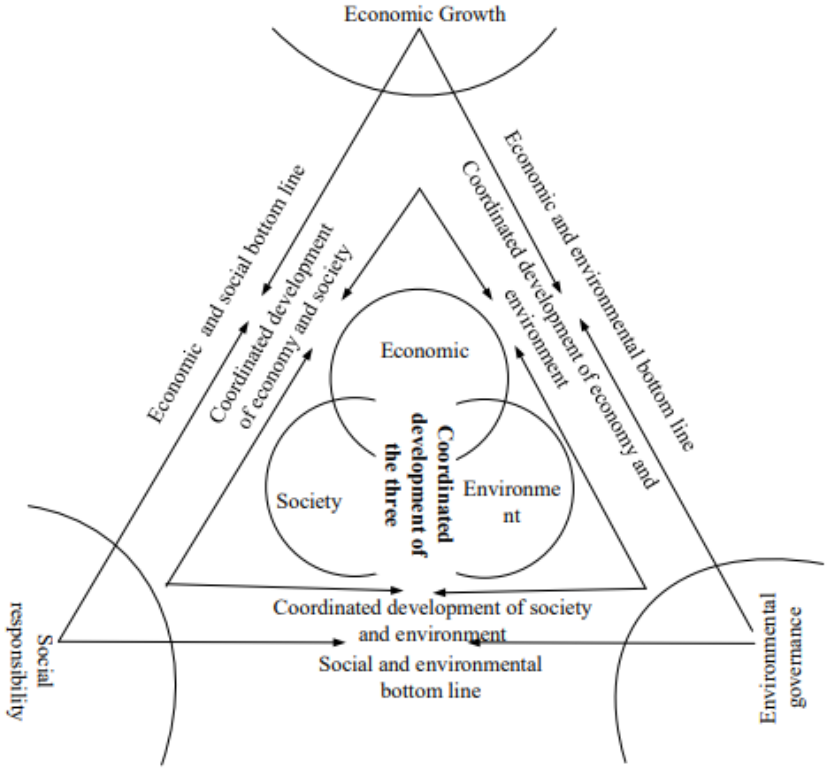

Figure 2. SMEs and the sustainability concept.

Multi-criteria decision analysis

Multicriteria Decision Analysis is a broad term that includes a collection of concepts, methods and techniques that seek to help individuals or groups make decisions involving different conflicting viewpoints and multiple stakeholders (Belton & Stewart, 2002)

Despite the existence of an important multi-criteria scientific literature, the tools, methods and even the multi-criteria reflection itself remain almost totally unknown to technicians and managers at all levels (Barba-Romero & Pomerol, 1997).

On the other hand, there are important implications to consider, since the models present dependence in the perception of the weights of the criteria provided by the decision makers and the generation of findings based on the models could be limited for some organizations. Indeed, in practice, developing a multi-criteria analysis methodology that results in a construct may support the decision-making process more adequately (Vásquez-Bernal and Cortés Aldana, 2014, 2018). See figure 3.

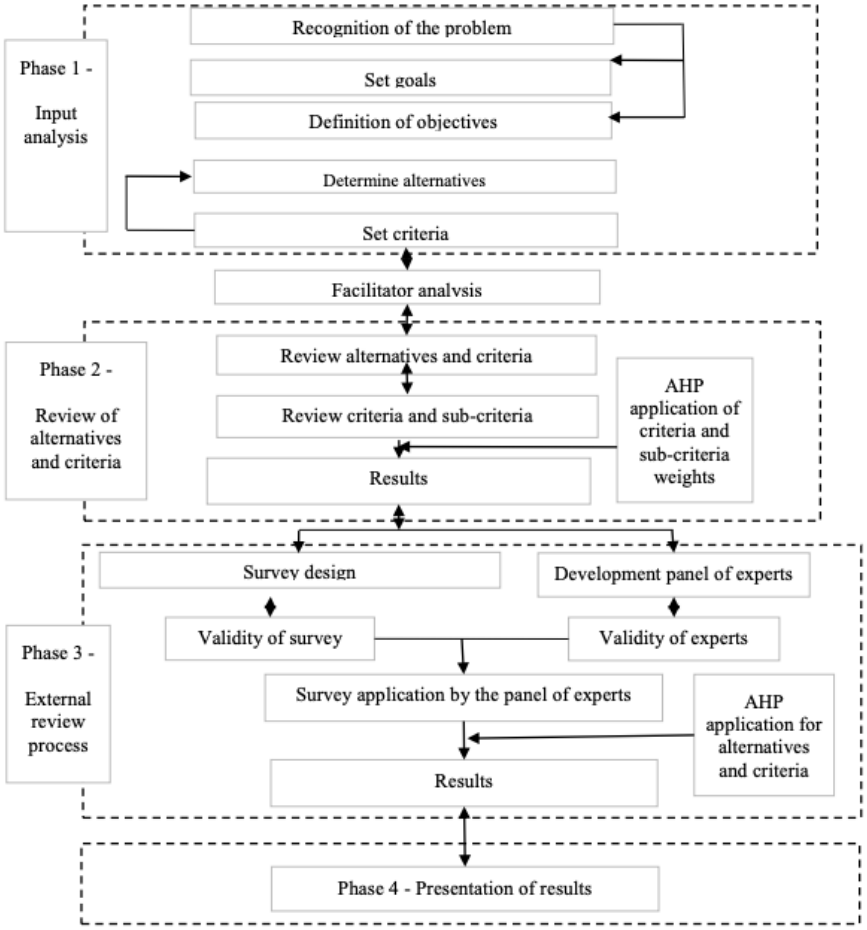

Figure 3. Decision making methodology (Vásquez-Bernal and Cortés Aldana, 2018)

Supply chains

One of the factors that determine the success of a supply chain is the integration and synergy that exists between the different actors in the chain and the capacity to focus the objectives on the satisfaction of the final and intermediate customers. The business concept of the supply chain has gained importance in the last decade, as it allows the identification and development of relationships, information flows, products and money between suppliers, companies and customers in order to transform raw materials into finished products, including the development of efficient operations management (Gómez, 2012).

Effective supply chain management involves the exchange of information and goods, between suppliers and customers, including manufacturers, distributors, and other companies involved in the operation of the supply chain". (Gunasekarana 2008, pp. 549 - 564).

It is important that the supply chain is approached from an internal and external perspective, as internal logistics is related to the movements that take place within the company, although they have a very close link with entities external to the organisation, they are intimately interrelated with the phases of production or operations and allow the process of administration of activities to be facilitated by facilitating the movement of goods from one place to another at the time that they are needed". (Smallco 1995, p. 30). Bernandez (2007, p. 28). indicates that from the external focus, in relation to the environment in which they operate, the three dimensions are considered by the design and analysis of the organizational structure (rational), the design of the organizational dynamics (open) and the analysis of the organizational culture (natural)"

Methodology

This research project has as its starting point, the Descriptive Study on Information Management and the Application of ICTs in Small Businesses in Bogotá, which allowed the establishment of a series of shortcomings in organizational management in the 130 SMEs (Mosquera-Laverde and Vásquez-Bernal, 2015), allowed the identification of categories and dimensions for the present work; hence this study depends on and is consistent with previous research in the three participating universities.

The proposed research has an action implementation (AI) scope, since it seeks to measure the impact of the sustainability management model, through a pilot test and thus optimize the productivity of small businesses in Bogotá. In this sense, it is based on four categories that encompass everything that must be considered in an organization to be sustainable and with which the impact can be measured as they are: Economic, Social, Organizational, Regulatory. These categories will be verified by means of dimensions (for example, Direct Economic Impact, Indirect Economic Impact) and sub-dimensions (for example, Customers, Suppliers, Employees, Investors, Public Sector, as well as, Competition, International Market), which guarantees the relevance of the data that will be obtained through the instruments.

Expected results

As a result of this research will be to promote an analysis tool for the improvement in the management of sustainability in small and medium enterprises in Bogotá D.C., in order to establish strategies for improvement in organizational management that adapt these organizations to be more efficient in the use of their resources, the development and improvement of their sustainable production processes. To this end, the results of the research will be taken into account in order to strengthen the support and advisory services provided to the SMEs in the study.

On the other hand, the development of research products to generate new knowledge and social appropriation is contemplated, which will help to disseminate the findings in the academic and business fields.

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Biographies

Oscar A. Vasquez-Bernal is an Associate Professor in the School of Basic Sciences, Technology and Engineering at Universidad Nacional Abierta y a Distancia, Bogotá Colombia. He earned his Ph.D. in Engineering at Universidad Nacional de Colombia, MBA - Master's in Business Administration from UNAD Florida USA, and BS in industrial engineering from Universidad Antonio Nariño, Colombia. He has published several journal articles and conference papers. Professor Vasquez-Bernal has been involved in projects with manufacturing and engineering companies. He is a management consultant in quality assurance, project management, and safety management. He has taught courses in entrepreneurship, strategy and corporate logistics and innovation for engineers; his research interests include certification, accreditation, multi-criteria decision analysis, and optimization. He is a member of NFPA, LACCEI, and IEEE.

William E. Mosquera-Laverde, is an Assistant professor Researcher, Business Administration Program, graduated as Chemical Engineer from the Universidad Nacional de Colombia, in 1993; Specialist in Higher Education, Universidad Nacional Abierta y a Distancia - UNAD, in 2010 and full master's in environmental management at Universidad de Los Andes, Bogota in 2014. Professor and researcher of Environmental Management at Universidad Cooperativa de Colombia. He has taught courses in Environmental Management, Operations Research, Quality Management, and Finance. He has worked with the Entrepreneurship Center at Universidad Cooperativa de Colombia and sustainability management in vulnerable communities and as a consultant to industrial companies since 1995.