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# DISASTER RISK MANAGEMENT IN BUSINESS EDUCATION ENTREPRENEURIAL FORMATION FOR CORPORATE SUSTAINABILITY

GESTIÓN DEL RIESGO DE DESASTRES EN EDUCACIÓN DE NEGOCIOS: FORMACIÓN EMPRENDEDORA PARA LA SOSTENIBILIDAD CORPORATIVA

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## ABSTRACT

The purpose of this paper is to show the importance of business education in Disaster Risk Management (DRM). This paper aims to evaluate the awareness level of the Master in Business Administration's (MBA) students regarding the importance disaster risk management (DRM) plays. This paper develops a literature review concerning the concept of disasters, Disaster Risk Management, Disaster Risk Reduction, and the role of MBA programs. Furthermore, a survey at Universidad EAFIT (Medellin, Colombia) was designed and implemented as primary source information with the purpose of showing the DRM awareness level of MBA's students. Finally, a case study connecting DRM with entrepreneurship formation is described. This paper identified a limited formal education in DRM Latin American MBA programs, and specifically at Universidad EAFIT. Additionally, a lack of awareness in MBA's students about the importance of DRM was identified. In this sense, the paper proposes a DRM education model that uses a Corporate Social Responsibility (CSR) and entrepreneurial formation in business education. This study aims to show the importance of the inclusion of disaster risk reduction and management knowledge as part of the courses in: Corporate Social Responsibility (CSR), Sustainability, and Entrepreneurship content in Masters in Business Administration (MBA) programs.

## KEYWORDS

DRM; business continuity; MBA; Business Schools; Business education; CSR; sustainability.

## RESUMEN

El propósito de este artículo es mostrar la importancia de la educación de negocios en la Gestión del Riesgo de Desastres (GRD). Este artículo busca evaluar el nivel de consciencia de los estudiantes de la Maestría en Administración (MBA) con respecto a la importancia de la gestión del riesgo de desastres. Este estudio desarrolla una revisión de la literatura sobre los conceptos de desastres, Gestión del Riesgo de Desastres, Reducción del Riesgo de Desastres y el rol de los programas de MBA. Además, como información primaria, se diseñó e implementó una encuesta en la Universidad EAFIT (Medellín, Colombia) con el propósito de mostrar el nivel de consciencia en cuanto a la GRD de sus estudiantes del MBA. Finalmente, se describe un estudio de caso que conecta la GRD con la formación emprendedora. Este artículo identificó una limitada educación formal en GRD en los programas de MBA de América Latina, y de manera específica, en la Universidad EAFIT. Adicionalmente, se reconoció una falta de consciencia en cuanto a la importancia de la GRD en los estudiantes del MBA. En este orden de ideas,

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este artículo propone un modelo educativo de GRD que utiliza la Responsabilidad Social Empresarial (RSE) y la formación emprendedora en la educación de negocios. Este estudio busca mostrar la importancia de la inclusión de conocimientos en reducción y gestión del riesgo de desastres como parte de los cursos y contenido de Responsabilidad Social Empresarial (RSE), Sostenibilidad y Emprendimiento en los programas de Maestría en Administración (MBA).

### **PALABRAS CLAVE**

GRD; continuidad de negocio; MBA; escuelas de negocios; educación de negocios; RSE; sostenibilidad.

### **INTRODUCTION**

Recent increases in the population, urbanization levels, and climate change have increased the awareness level of international organizations' concern for the need to advocate for a comprehensive and integrative approach to Disaster Risk Management (DRM). Disaster risk management (DRM) has gained greater importance as economic, social and environmental losses arising from disasters have grown dramatically since the 1990s. A variety of organizations have become aware of the need to promote the integration of initiatives based on the collaboration of diverse stakeholders. The United Nations (UN), through its Office for Disaster Risk Reduction (UNISDR), has implemented several initiatives on this topic. Its concerns have also been addressed in the Global Assessment Report (GRA), a biennial global assessment of disaster risk reduction and comprehensive review and analysis of the natural hazards that are affecting humanity. Additionally, UNISDR and Pricewaterhouse Coopers (PwC), together with other public and private sector organizations around the world, including The Economist Intelligence Unit (EIU), Florida International University (FIU), UN supported Principles for Responsible Investment (PRI), AECOM and Willis, have joined to create the RISE Initiative which seeks to make all investments risk-sensitive.

These efforts will be aimed at reducing global disaster mortality, the number of affected people, economic losses, and disaster damage to infrastructure while promoting the implementation of disaster risk reduction (DRR) strategies globally and enhancing international cooperation. The need to raise awareness and knowledge about disaster risk management (DRM) and disaster risk reduction (DRR) in the business environment demands action from those involved with business education. The role of educational institutions will be crucial due to the importance of knowledge generation and its influence over society as a whole. More specifically, for this analysis, business education, in its mission to educate future managers, does not only have a responsibility with the production and imparting of knowledge, but also has a direct effect on how private organizations work. The paper aims to highlight the importance of DRM education in business schools, particularly the role of Masters in Business Administration (MBA) programs in contemporary corporate agendas from both the Corporate Social Responsibility (CSR) and Sustainability perspectives. This analysis will explore the need to raise the level of concern in disaster risk management in business education, and consequently, in private organizations.

It is likely that the discussion of disaster risk management will increasingly gain relevance given the 2030 Development Agenda. The Sendai Framework adopted in March 2015, “the first major agreement of the post-2015 development agenda” has created awareness of the need to reduce disaster risk through a collaborative approach. This is also consistent with current academic literature that supports the idea of a paradigm shift in how disaster risk management is addressed. Different scholars (Al-Nammari & Alzaghal, 2014; Chitakornkijasil, 2010; Henstra & McBean, 2005) discuss the importance of adopting a proactive model to replace the reactive perspective which has predominated. According to UNISDR (2015a) the only possible way to come up with proactive actions, with capacity building and value added solutions in the imminent context of disaster, is to see responsibilities as common objectives of different actors within society. Responsibility for the Seven Global Targets proposed in 2015 during the Third UN World Conference on Disaster Risk Reduction (WC-DRR) should be shared among multiple stakeholders including local government, the civil society in general, and the private sector.

Within this context, two important stakeholders emerge based on their ability to transform the way human society works today. These are private organizations and educational institutions. In the case of companies, the 2013 Global Assessment Report (GAR), draws attention to the role of private organizations in disaster risk management. Previous editions of the GAR focused predominantly on policy and decision-makers in governmental institutions. The 2013 edition brought the disaster business case to corporate agendas with its theme “From Shared Risk to Shared Value: The Business Case for Disaster Risk Reduction”, and it aims to show the challenges and opportunities for businesses in a hazard-prone environment. According to the 2013 GAR: “disaster risk management reduces uncertainty, builds confidence, cuts costs and creates value” (UNISDR, 2013, p. iii). In the case of educational institutions, they will be decisive actors in a post-2015 scenario because education has the potential to promote structural changes in society.

Based on the role that business education plays, it emerges as an important tool in 2030 development agenda, and the overall disaster risk management development strategies for companies. Business schools have both the potential to transform individuals, as well as how the business environment works. It has been said that business education is responsible for training future managers, and consequently it is important to identify the extent to which Master in Business Administration (MBA) programs are responding to current needs in terms of disaster management.

## LITERATURE REVIEW

### Disaster Risk Management

Since the 1990s, losses arising from natural disasters have continuously grown both in developed and developing countries (Courbage & Mahul, 2013). The United Nations Office for Disaster Risk Reduction has calculated in its last Global Assessment

Report on Disaster Reduction (GAR) (UNISDR, 2015b) that economic losses resulting from disasters like earthquakes, tsunamis, cyclones, and flooding are now reaching an average of US\$250 billion to US\$300 billion each year. Disasters are becoming an increasing concern not only for international organizations and governments, but also for the society in general. UNISDR (2016) defines a disaster as a “serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.” Additionally, disasters are commonly described as a result of the combination of the exposure to a hazard; vulnerable conditions; and insufficient capacity to reduce or cope with the negative consequences of the event (UNISDR, 2016). On one hand, natural disasters are catastrophic events that originated from natural causes such as volcanic eruptions, tornadoes, earthquakes, etc., over which man has no control; they are often termed “Acts of God”. On the other hand, man-made disasters, are those disastrous events caused by human action or decisions. They tend to be related to structural collapses, transportation accidents, international or national conflicts, and terrorism (Shaluf, 2007).

Some other definitions from academic studies include an event in which one or more of the following consequences occur over a relatively short period of time: (i) ten or more fatalities, (ii) damages for more and USD 1 million, and (iii) 50 or more people evacuated (Keller & Al-Madhari, 1996). Similarly, Shaluf (2007) argues that it is a sudden disruption of the functioning of a given society which causes widespread human, material or environmental losses. Shaluf also cites the Center for Research on the Epidemiology of Disasters’ (CRED) (2003) criteria in order to define disasters: 100 or more people affected, a call for international assistance, and a declaration of a state of emergency. Rautela (2006, p. 802), defines a disaster as “a state of extreme ruin and misfortune that leads to the breakdown of the social fabric” in which the affected community’s recovery is difficult to reach, and usually needs external assistance. Finally, public health disasters have been defined as destructive events that result in the need for a wide range of emergency resources, to assist and ensure the survival of the affected population (Geale, 2012).

According to the United Nations Development Programme (UNDP) disasters can not only reverse economic growth, but also restrict advances in poverty elimination, and environmental sustainability (UNDP, 2016). Given this position, UNDP has drawn international attention to the importance of reducing risk as part of national governments’ development plans: “Every dollar spent on preparing for disasters saves around seven dollars in economic losses.” Risk assessment is the process of the identification, quantification and characterization of threats to human health and environment (Vatsa, 2004). Consequently, disaster risk reduction (DRR) has gained visibility and importance as a way to achieve better results and foster change that helps society to be resilient to risks (Ishiwatari, 2010) or in the words of Geale (2012): to alleviate human suffering. Al-Nammari & Alzaghaf (2014) emphasize how DRR

comprises the systematic development and application of policies, strategies and practices to avoid or limit the adverse effects of hazards. UNISDR (2007) sees DRR as “the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters.” This process includes reducing exposure to hazards, and managing the vulnerability of people and property, as well as dealing with the use of land and the environment. Finally, UNISDR (2016) highlights the importance of reducing exposure to hazards, lessening the vulnerability of people and property, wisely managing land and the environment, and improving preparedness and early warning for adverse events as effective measures in DRR.

Disaster Risk Management (DRM) comprises mitigation, preparedness, response, and reconstruction (or recovery) (Madu & Kuei, 2014; O’Brien, O’Keefe, Gadema & Swords, 2010), and it involves a range of policies and practices developed to prevent, manage, and reduce the impact of disasters (Henstra & McBean, 2005). Salter (1997) argues the main objective of DRM is to guarantee the reduction of the community’s exposure to major risks. This perspective is consistent with the “paradigm shift” described by Henstra & McBean (2005) in which there is an increasing consensus in the international arena on a move from a reactive response to more proactive disaster management including mitigation and risk reduction. This concept has been described by Chitakornkijasil (2010) as a shift from an offensive line towards an earlier stage which tackles the problem at its source, and by Al-Nammari & Alzaghali (2014) as a way to turn disaster management into an integrated approach that combines it with development activities. Alexander, Chan-Halbrendt & Salim (2006) describe the evolution in disaster management as a shift to an integrated and overall dynamic sustainable development for sustainable capacities they lack.

Such an approach has been described as Integrated Disaster Risk Management (IDRM): a process which comprehensively estimates and manages risks from synergies created through different procedures and institutions (Amendola, Linneroath-Buyer, Okada & Shi, 2008). Bildan (2003) discusses the effective coordination of knowledge and action from multiple organizations in the processes of prevention, preparedness, and mitigation phases of disaster management as effective tools in reducing lives and property losses. Gall, Nguyen and Cutter (2015) also promote interdisciplinary efforts and perceive the coordination, with the international organizations as one of the main actors, as a collaborative model reflecting holistic interpretations and actions and not a mere “sum of all the parts.”

The international concern about disaster risk management has been present since 1990s, when UNISDR (1994) hosted the World Conference on Natural Disaster Reduction, held in Yokohama, Japan. The strategies and plan developed at this conference provided important guidelines for natural disaster prevention, preparedness and mitigation, and served as a framework for DRM during International Decade for Disaster Reduction. In 2005, the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (HFA) replaced the Yokohama Framework. This action plan described and detailed the work that would be

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required from all the different sectors and actors to reduce disaster losses (UNISDR, 2016). This framework aimed to ensure that disaster risk reduction was a national and a local priority with a strong institutional basis (Amendola et al, 2008). A number of authors identified the initiatives needed to reach cooperation between public and private sectors with the facilitation of the international community (Rautela, 2006). These initiatives have also been promoted by the Sendai Framework for Disaster Risk Reduction 2015-2030 signed in 2015. The Sendai Framework is a 15-year, voluntary agreement which recognizes that the State has the primary responsible to reduce disaster risk but it also highlights that responsibility should be shared with other stakeholders including local government and the private sector (UNISDR, 2016).

### Disaster Risk Management in Business Education

Historically, higher education has been perceived as a crucial stakeholder in society's transformation. For the case of DRM, there has been an effective coordination between different fields of knowledge including engineering, health sciences, technology, and at some point, economics. For the Latin American case, a universities' network has worked together using knowledge and best practices from different fields with the purpose of providing solutions for the most vulnerable populations in the region. Redulac is the *Latin America and the Caribbean University Network for Disaster Risk Reduction* which works with different educational organizations in 17 countries in the region, and which highlights the great responsibility the higher education sector plays a role in addressing the problems associated directly or indirectly with the issue of risks and disasters in the region and the world. This organization works with the support of the United States Agency for International Development (USAID). This institution recognizes its role in the search for possible solutions to the causes of disasters, and the need to play a more proactive role aimed not only in the prevention and reduction of natural hazards, but the promotion of recovery and resilience instruments within a sustainable framework (Redulac, 2016).

The UNISDR (2012) has recognized the importance of this Latin American initiative and the convening of the Latin American Forums on Disaster Risk Reduction in Higher Education which have taken place in Panama City, Panama in 2012, and in Bogota, Colombia, in 2014. The great contribution of this network, in the words of UNISDR (2012) is the continuation of its efforts during recent years in the promotion of the institutionalization process of disaster risk reduction in educational institutions in Latin America, using the power of higher education to transform not only the society, but the complete educational system including preschool education and basic education in general. The academic offer by Redulac includes academic programs in risk management, disaster risk management, emergency care, environmental studies, public health, and disaster prevention, which operate within health, development, engineering, environmental, and social sciences schools. However, for the case of the present proposal, it becomes apparent that there exists an ineffective component inherent in the inclusion of business schools in this network. In

the following section, some academic support regarding the need to both integrate managerial skills and knowledge to the disaster risk management discussion, and promote a disaster-conscious education in higher business education is presented.

The role of business education in disaster risk management comes from its ability to transform communities and to generate capacities. Although fields like engineering, science and technology have traditionally been the leaders in innovations and processes in disaster management. Due to this fact, there has not been an effective inclusion of business education in capacity building for mitigation, preparedness, response, and reconstruction for disasters. Additionally, the fact that professional managers, especially Masters in Business Administration (MBA), will become decision-makers and important actors in the private sector; and consequently in the whole society. "The fundamental mission of business schools is to train the future generation of managers. As part of education process, business schools strive to prepare managers to lead changes in their organizations" (Almog-Bareket, 2011, p. 1600). Moreover, MBA students are commonly perceived as the future managers of the corporate world stakeholders (Jain, Datta, & Roy, 2014), and are now considered to be "among the most influential mechanisms for preparing future business leaders" (Hart, Fox, Ede & Korstad, 2015, p. 721).

This demonstrates not only the relevance of business education for the private sector, but for the society as whole. If topics dealing with development are not in the mind-set of managers, it will be very difficult to undertake the collaborative actions between private sector companies and other organizations, that DRM demands. In the same way it has been done with CSR, by engaging MBA students in disaster risk management concerns, they can make companies understand their responsibility towards stakeholders (Jain et al, 2014). In this sense, disaster risk management can actually become part of the CSR and sustainability agenda of private companies, as it can be used to respond to stakeholders' interests. In fact, this cannot only turn into a social need, but as has happened with CSR and sustainability, it could become a requirement for MBA students: "as CSR becomes increasingly important for success in the business world, business students increasingly expect CSR to be an important part of MBA programs" (Hart *et al.*, 2015, p.715) Consequently, CSR and sustainability in the context of business education are becoming both a way to respond to today's business environment, and as an effective differentiator for those MBAs that offer this content (Rubin & Dierdoff, 2009). As stated by Rubin & Dierdoff (2009), as educational institutions should drive their curriculum design responding to actual managerial requirements and to relevant challenges in the current corporate context, there is an increasing need to integrate DRM as part of the MBAs educational programs.

## METHODOLOGY

This paper addresses the question of the role of managerial education in DRM. This paper primarily relies on secondary, publicly-available information to develop a literature review concerning the concept of disasters, Disaster Risk Management, Di-

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saster Risk Reduction, and the role of MBA programs. Different academic studies and *América Economía's* ranking were also used as secondary sources. Additionally, for this study, a survey was designed and implemented to provide primary information to describe the case of Universidad EAFIT's MBA. Finally, some conclusions are drawn for the case of business education in DRM.

After presenting the importance business education plays in the promotion of a disaster risk management consciousness, some figures about DRM in business schools, specifically in MBA programs are presented. *América Economía*, the Latin American magazine which analyzes the business, economics, and finance of the region, had developed the MBA Ranking with the purpose of identifying the best business education schools in the region. In 2015, *América Economía* highlighted the role of 35 MBA programs in the region by measuring their academic strength, knowledge production, internationalization, and the power of its network (this evaluates the current positions of MBA graduates). Mexico, Chile, Brazil, and Nicaragua and Costa Rica are in the top of this list with Egade Business School, Universidad Adolfo Ibáñez, FGV- EAESP, INCAE, and Universidad de Chile. This means, following Almog-Bareket (2011) and Jain, Datta & Roy (2014), these educational institutions will have an important impact in Latin American companies, while training their future managers (América Economía, 2015).

## FINDINGS

As has already been mentioned, there is a need to integrate managerial skills and knowledge into the disaster risk management discussion, while promoting a disaster-conscious approach in higher business education. However, when reviewing the academic programs of *América Economía's* ranking it is difficult to identify specific content on disaster management. Consequently, and with the objective of proving a proposal based on Universidad EAFIT's case, this paper evaluated its MBA program, and MBA students' knowledge about disaster risk management. In this sense, this evaluation will be useful in understanding if the current business education program promotes DRM as part of their training priorities and if DRM current students are aware of DRM as an organizational challenge. Universidad EAFIT is in position 24 in *América Economía's* MBA ranking. EAFIT's *Maestría en Administración* was the first MBA program in Colombia; and actually its host business school was the first one in the country. The MBA was born in 1973 in response to the need for educating current and future managers and decision makers in Colombia. As of March 2016, the program has 215 students in a variety of cities in Colombia including Medellín, Bogotá, Pereira, and Armenia. It also has foreign operations in Guatemala. Currently, disaster risk management is not part of the curriculum, although some concepts of risk management are addressed in different courses. In this sense, our hypothesis is that MBA students are not familiar with the concept, and if they are, this knowledge has probably not been acquired through their formal education.

The survey used, evaluated a total of 64 students, which represents almost 30 percent (29.76%) of the total population, and shows the awareness of Universidad EAFIT's MBA students in terms of disaster risk management. In general terms, it is possible to observe that the majority of the students are not familiar with the concept of disaster risk management (DRM): a total of 60.9% of the population (39 students) answered "No" to the question: "Are you familiar with the concept of Disaster Risk Management?" (Appendix 1 contains charts 1 and 2 with the results). This finding shows a lack of DRM knowledge within MBA students. Furthermore, when asking those who answered "Yes" about how they knew about DRM, 76% confirmed they were familiar with disaster management because their current job was connected in some way with DRM, 16% agreed they knew of the concept because of job training they had received. Primarily, these sectors include: Insurance, Banking, Construction, and Consultancy. Finally, only one student (4%) mentioned "Education" as the reason for knowing about DRM. It is possible to conclude that MBA students at Universidad EAFIT are not well instructed about DRM concepts, and disaster risk education usually comes from the work environment.

Based on the fact that the MBA program does not give specific instruction on disaster management, the survey also aimed to identify the relevance that students would give to DRM as a potential change to the curriculum. Accordingly, the survey asked students: "How important do you think it would be to include DRM content in your MBA curriculum?" In this question, the sample had to decide between five options which defined the level of importance they assigned to the matter: Extremely Important, Important, Moderately Important, Somewhat Important, and Not Very Important. However, results in this question are not as significant: almost a third of the population (33%) considers "Moderately Important" the inclusion of DRM content in the academic program, while option "Not Very Important" was selected by 16% of the population, and "Somewhat Important" and "Important" were both chosen by an equivalent of 20% each. Finally, only 11% of the sample (5 students) considered DRM as an "extremely important" element in their MBA curriculum. To summarize, most of the students do not consider DRM to be a crucial skill in their business education, and more importantly, only a few think it should be a priority in a potential change to the MBA curriculum.

## DISCUSSION

After analysing *América Economía's* MBA ranking, it is possible to observe that top MBAs in the region offer specific courses in corporate governance and ethics, corporate sustainability, leadership, innovation, entrepreneurship, corporate social responsibility, sustainability leadership, and leadership and organizational change, and risk management. In this sense, while it is not possible to claim that disaster risk management is not part of the business education, due to the impossibility of checking the complete structure of the MBA courses, it is important to mention, for the purpose of

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this analysis, that it seems that disaster risk management is not one of the core skills that MBAs aim to develop in Latin America. This differs with CSR and sustainability education, when looking at the ranking, as it is an important differentiator of top business schools. For the case of MBA students at Universidad EAFIT, it is possible to identify that they are not well versed with DRM concept. Disaster risk formation usually comes from the work environment. Most of the students do not consider DRM to be a crucial skill in their formal business education, and more importantly, only a few think it should be a priority in a potential change to the MBA curriculum.

Using information on how to address multi-stakeholder, and sustainability concerned practices in MBA programmes, this paper proposes a Corporate Social Responsibility and sustainability-sensitive education in MBA programs, with an entrepreneurship-oriented focus. In keeping with the international concern about the need of a collaborative approach between stakeholders towards disaster risk management, this type of business education will not reduce the impact of disasters in business environment, but is aimed at promoting value generation with sustainable management perspective. It will be possible to mainstream DRM content into the Master in Business Administration (MBA) programs. With the purpose of showing the potential of sustainable sensitive entrepreneurship formation, this study shows the case of a successful spin-off at Universidad EAFIT that promotes a proactive perspective towards DRM.

### **CASE STUDY: UTÓPICA**

In the following section, this paper provides an example of a disaster risk management initiative that has been developed by Universidad EAFIT in Medellín, Colombia. This project is not only an example of how higher education can create innovative tools in DRM, but an important example of how cooperation between different stakeholders may create synergies. Utópica is a spinoff from Universidad EAFIT which was founded by two product design engineers in response to the disasters caused by the 2010 and 2011 rainy season in Colombia. This disaster caused by the *La Niña* phenomenon affected an estimated of 2,350,207 people in the country in 998 municipalities (IGAC, IDEAM & DANE, 2011), and caused economic losses for about 11.2 billion Colombian pesos (COP), an equivalent of 6,052 USD million. These rains presented the highest levels in 40 years and created floods that triggered damages in the water supply, agriculture, and manufacturing sectors, and in education (CEPAL, 2012). After the 2010-2011 rainy season or *ola invernal* (“wintery wave”), as it has been known during last years, schools were flooded and hundreds of children lost months of education due to the problems caused to infrastructure. Lina Cataño and Andrés Walker, product design engineers from Universidad EAFIT, saw the consequences of this disaster as an opportunity to provide engineering solutions. The first project was developed in Sempegua, a population in the Colombian province of Cesar, located in the Northeast side of the country.

The project was created with the support of United Nations Development Program (PNUD) and *Unidad Nacional para la Gestión del Riesgo de Desastres* (UNGRD), National Unit for Disaster Risk Management. Utópica provides DRM solutions through amphibious houses as an alternative to basic housing for flood-prone areas. This spinoff is considered a DRM idea as it not only reduces the consequences of disaster risks, but it also considers processes of mitigation, preparedness and reconstruction. In general terms, both Lina and Andrés highlight the importance of adopting new strategies to deal with climate change. They consider adaptation as a key element in any DRM plan for governments and other stakeholders, and amphibious houses respond to climate change adaptation needs. Sempegua's floating house is the first to be built in Latin America, however this technology has been developed by developed countries in other continents, like England and Germany. The main innovation developed by researchers at Universidad EAFIT was the possibility of creating floating platforms with low cost materials: amphibious houses around the world use expensive raw materials that would otherwise make it impossible for low income communities to build.

It is also important to mention that Utópica's team recognizes the need to improve its managerial skills for the purpose of becoming a sustainable and accomplished business model. Andrés Walker, emphasizes the great potential that business schools have to contribute to disaster risk reduction plans in terms of lowering costs, developing efficiencies in the project, and reaching economies of scale. In spite of the importance of different stakeholder collaboration in the project, the sustainability of the operations will only be realized if a well-planned business model in which business managers and students work collaboratively is achieved.

## CONCLUSION

The need to foster collaborative strategies in disaster risk management between different stakeholders have created the concern for the effective inclusion of business education in the generation of value added alternatives. This is consistent with the need to respond to a paradigm change in how disasters have been undertaken: from a reactive to a proactive model. In this context the role of business education has been proposed due to its ability to cultivate future managers along with the potential of higher education to lead structural changes within the society. In keeping with the international concern about the need for a collaborative approach between stakeholders towards disaster risk management, this type of business education will not reduce the impact of disasters in business environment, but it aims to promote value generation with a sustainable management perspective. This paper identified a limited formal education in DRM in some Latin American MBA programs, and specifically in Universidad EAFIT's, and a lack of awareness in MBAs students. With the purpose of showing the potential of sustainable- sensitive entrepreneurship formation, this study showed a case of a successful spinoff at Universidad EAFIT that

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promotes a proactive perspective towards DRM. This approach seeks to integrate managerial skills and knowledge with DRM, and to promote a disaster-conscious education in business education.

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### NOTE

This paper is the result of the research presented at the Workshop on Disaster Risk Management in Business Education, hosted on March 23-24, 2016, in Toronto, Canada by York University's Schulich School of Business. The conclusions and outcomes of this conference will be implemented at Universidad EAFIT by a multi-disciplinary team. The proposals for the implementation of these measures are explained in detail in Appendix 2.

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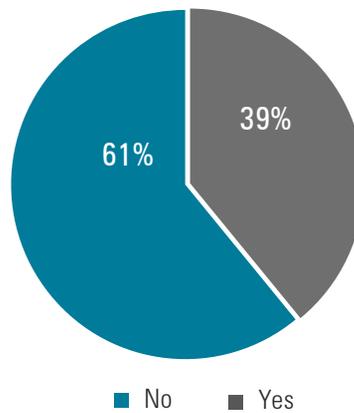
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## APPENDIX 1. DSM AWARENESS IN MBA STUDENTS

**Chart 1.** Describes the responses to the question “Are you familiar with the concept of Disaster Risk Management?”

Are you familiar with the concept of Disaster Risk Management?



**Chart 2.** Describes the responses to the question “How did you know about Disaster Risk Management?”

How did you know about Disaster Risk Management?

