

**The Effect of Occupational Safety and Health Administration and
Corporate Social Responsibility Implementation on Firm Valuation:
Case of Egypt An Empirical Study**

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Abstract

Sustainability means protecting natural environment, human and ecological health, while driving innovation and not compromising ways of life. Occupational safety and health administration (OSHA) and corporate social responsibility (CSR) programs are essential for achieving sustainability. Many firms are reluctant to report occupational safety and health administration and corporate social responsibility programs believing that it will negatively affect their future earnings. This reluctance is motivated by the background presented in the stakeholders and management theories. Therefore, the current study aimed at determining the effect of the implementation of Occupational safety and health administration and corporate social responsibility programs on future earning of firms listed in the corporate social responsibility index in Egypt. There are 20 Egyptian firms listed in the corporate social responsibility index after excluding banks and financial institutions, the current study was executed on data gained from year 2004-2017 about 12 firms after excluding banks and some financial institutions as they are committed to different accounting system. Results proved that the implementation of OSHA and CRS programs have a significant effect on firm's future earnings. Results are discussed, recommendations are presented, and based on study limitations, several future researches are suggested.

Keywords: Sustainability - Occupational safety and health administration – corporate social responsibility – future earnings- corporate social responsibility index.

المخلص:

تعد التنمية المستدامة من أهم المفاهيم التي تعنى الاهتمام التطوير والتحديث والابتكار مع عدم إغفال حماية البيئة الطبيعية وحياة الإنسان والصحة العامة، و تنطوي برامج إدارة الصحة والسلامة المهنية جنباً إلى جنب برامج المسؤولية الاجتماعية على أهمية كبيرة لتحقيق التنمية المستدامة و الحفاظ عليها، و يتردد عدد كبير من الشركات في إيضاح أنشطة و برامج الصحة و السلامة المهنية و المسؤولية الاجتماعية في القوائم المالية استناداً إلى اعتقاد سائد يستند إلى نظريات الإدارة و أصحاب المصالح بأن لذلك أثر سلبي على الأرباح المستقبلية، و على ذلك تستهدف الدراسة الحالية بيان تأثير تنفيذ برامج الصحة و السلامة المهنية و المسؤولية الاجتماعية على الأرباح المستقبلية للشركات المدرجة بالمؤشر المصري للمسؤولية الاجتماعية و التي بلغ عددها ١٢ شركة بعد استبعاد البنوك و المؤسسات المالية بالتطبيق على فترة زمنية امتدت من ٢٠٠٤ حتى ٢٠١٧، و لقد أوضحت النتائج أن تنفيذ برامج الصحة و السلامة المهنية و برامج المسؤولية الاجتماعية للشركات له تأثير معنوي على الأرباح المستقبلية للشركات محل الدراسة، و على ذلك، تمت مناقشة النتائج و تقديم عدد من التوصيات، و عدد من الدراسات المستقبلية.

الكلمات المفتاحية: التنمية المستدامة، برامج الصحة و السلامة المهنية، المسؤولية الاجتماعية، الأرباح المستقبلية، المؤشر المصري للمسؤولية الاجتماعية.

1/ Introduction

Management and accounting literature in Egypt is quite silent on employee safety and healthy working environment. Employee health and safety working environment is an essential phrase of sustainability (Chiarini et al., 2017). According to Despeisse et al. (2012), the concept of sustainability shaped into three encompassing dimensions: economic, social, and environmental as an integral component of both SA8000 and ISO 26000. Sureeyatanapas et al. (2015) considers health and safety to be a key indicator of firm social performance as it's an important dimension of sustainability. However, in spite of the growing importance of workplace safety for the sustainability effort of a firm, Occupational Safety and Health Administration and corporate social responsibility appear to get a basic important in research of sustainability.

Shareholders evidence in sustainability indicators suggest that perceive environmental, social and sustainability engagement is important, especially if the firms implement safety and health care programs and being a part of corporate social responsible member (Boyd, 2017; Zhang and McDermott, 2017; Koskela, 2014; Pouliakas and Theodossiou, 2013)

Occupational Safety and Health Administration is an initiative for assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance. The world standard for occupational safety and health evaluation 18001 issued in 1999 covered the requirements of the occupational safety and health system for enabling corporations to control the risks inherent in that field but without devising fixed standards for the performance of the occupational

safety and health system or giving detailed specifications for the design of the related administration system (Desa et al., 2013).

Safety performance can be regarded as "the extent to which accidents and their accompanying costs do not occur during the management of a particular segment of work" (Levitt and Samelson, 1994). In Egypt, two safety performance measures are applied for the construction sector as a whole; a frequency measure and a severity measure according to the Egyptian Labor Law (1981). The frequency measure is based on the number of accidents. A severity measure, on the other hand, is based on the number of lost days due to missed OSHA in workplace. However, this reflects the role of the firm employee safety programs and corporate social responsibility in achieving excellent reputation that lead to increased profits in short term and increase the firm market value in the long term and then increase in firm profits.

As a result of the crucial importance of social responsibility programs for both firms and its shareholders, the concept of economical and societal revenues has emerged and developed. Businesses are now being evaluated not only on the basis on their financial performance, rather, nonfinancial indicators are gaining more importance than before (Balabanis, 1998). One of the main nonfinancial indicators is social responsibility programs and activities that enhance corporate reputation, competitive advantage, employees and customer retention, governmental compatibility, commitment with laws and regulations, community welfare, and finally corporate survival.

The current study will be formulated as follows; Literature review and hypotheses development, research problem, research objectives, research

importance, theoretical background, hypotheses testing results, discussion, practical implication/ recommendation, limitation and future research.

2/ Literature review and hypotheses development

Occupational Safety and Health Administration has been studied lately from different perspectives. These perspectives have aimed at assessing manager reluctance to reports OSHA programs. Managers are reluctant to report these programs motivated by the desire to increase employees' productivity from one side and decrease relevant costs and expenses from the other side. Cohen and Wardlaw (2016) concluded that the rates of injury in the workplace were positively related to both firm's high financial leverage and the shocks of negative cash flows. Moreover, DURA et al. (2018) have pointed that managers tend to reduce maintenance costs of machinery and equipment as a stratagem for realizing expected profits on the expense of employees' occupational safety and health.

Caskey and Ozel (2017) have assured that firms which implement OSHA programs undergo three main forces; labor unions, governmental forces, and insurance firms. Cohen et al. (2010) have added that firms tend to manipulate real practices including OSHA in way that cannot be uncovered in the short run but will be definitely uncovered in the long run. Graham et al. (2005) assured that achieving satisfactory future earnings may require diminishing OSHA programs which will result in increasing injuries' rates which will motivate investors to review OSHA programs real implementation to make sure that future earnings are based on real activities. Abdul-rashid et al. (2007) have showed that top management awareness of crucial importance of OSHA programs will affect its implementation.

Hassanein and Hanna (2008) have studied OSHA programs implementation in terms of accidents insurance expenses in contracting firms in Egypt. Moreover, ZhangeMcdermott (2017) have reviewed strategic plans of several firms and has found that top management neglected OSHA programs, rather they concentrated on financial performance instead. From another view of point, Boyd (2017) has studies OSHA programs in terms of bankruptcy probabilities using nonfinancial metrics to create bankruptcy prediction and analytical models. No empirical evidence was found that safety data is associated with future incidence of bankruptcy.

There are several studies that explored the effect of OSHA programs implementation on future earnings. Degeorge et al. (1999) has compared between injuries rates in firms that implement OSHA programs and firms which don't. Results showed that one employee has been injured of each 24 employees in firms that don't implement OSHA programs and surprisingly exceeds future earnings. In firms that implement OSHA programs, one employee has been injured of each 27 employees but unfortunately could not meet future expectations. This study has concluded that low safety and health costs and expenses has led to meeting and exceeding future earnings.

Rose (1990) has confirmed that there is a direct relationship between employees and customers safety from one side and sound financial performance from another side. Moreover, Bernsteine and Sheen (2016) assured that investing in safety, health, and clean concerns will lead to better future earnings.

CSR has been studied from different viewpoints. Zulni (2013) has studied the effect of CSR activities reporting on future earnings for number of Indonesian firms. Results showed that there is no scientific evidence that CSR

activities have an effect on future earnings. Moreover, Adebayo and Olufemi (2012) have studied the effect of CSR activities reporting on future earnings and firm reputation and results showed that there is a significant relationship between CSR activities reporting with firm's future earnings and reputation. In addition, Holbrook (2013) has concluded that firms that don't stress CSR programs implementation have witnessed revenues fluctuations in relation to risk associated with not implementing CSR programs. Finally, Abukosim et al. (2013) have studied the relationship between CSR activities reporting and financial performance in Malaysian business environment and results showed that there is a significant relationship between CSR activities reporting and financial performance which is the same result of Munasinghe and Kumara (2013) who studied the effect of CSR activities reporting on financial performance of 14 firm in Sirilanka.

OSHA and CSR programs have been studied collectively in some research to find out the effect of implementation on financial performance, specifically, future earnings. Prior studies argued that there is a direct effect of firm's occupational safety and corporate social responsibility practices on their financial performance respectively its future earnings and firm price (e.g., Schadewitz and Niskala, 2010; Greeves and Ladipo, 2004). Yu and Zhao, (2015) have supported these results through showing that in firms that apply governance, investors have a strong protection lead to premium firm valuation to environmentally and socially responsible firms. Moreover, Cardamone et al. (2011) assured that reporting OSHA and CSR programs as nonfinancial information in firm's financial statements has a direct effect on firm's stock

prices, and investors perceive OSHA and CSR information as a basis for firm accounting performance forecasts.

It is clear from the discussion above that most of previous researches have studied OSHA programs as a part of CSR programs or separately but in the context of sustainability. Indeed, Egyptian businesses tend to show or express activities that enhances their image or reputation in customers' minds or for governmental concerns, therefore, OSHA programs (which are concerned with employees and internal customers) will receive lower relative importance. Therefore, it is necessary to separate these two programs from each other to avoid under estimation of occupational safety and health administration programs which is of massive importance to internal customers. Some studies in Egypt lack aggregate handling of OSHA where they concentrated on accidents and injuries rate in workplace only instead of handling other OSHA activities. These studies highlighted managers reluctance to report OSHA and CSR programs as real activities based on the previously mentioned forces.

In sum, corporate social responsibility activity and occupational safety and health administration programs have been always studied collectively and have never been studied separately. This highlights a scientific gap which requires further analysis and investigation through determining the effect of OSHA and CSR programs implementation on future earnings in Egyptian firms; therefore, the following hypotheses have been formulated:

H1: A firm future earnings does not depend on Occupational safety and health administration implementation.

H2: A firm future earnings does not depend on corporate social responsibility implementation.

Figure (1) shows the research model and hypothesized relationships.

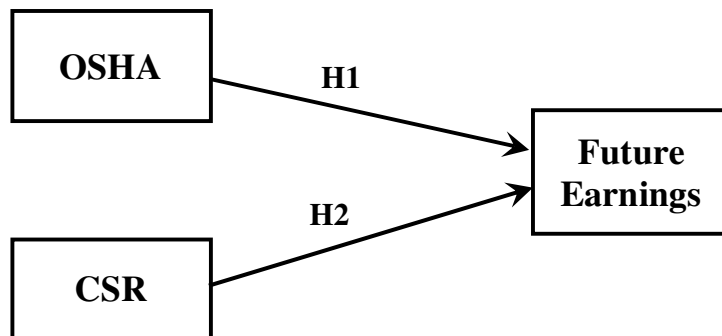


Figure (1): Research proposed model and hypothesized relationships

It is obvious from the previous figure that the main focus of this study is to show how separating occupational safety and health administration activities from corporate social responsibility programs affects future earnings. The objective is to show that there is no scientific evidence that firms' refusal or reluctance to report occupational safety and health administration negatively affects firms' future earnings.

3/ Research problem:

There are several views of points concerning reporting OSHA and CSR practices in the financial statements. Managers may adopt one of these views while reporting these practices. **First**, managers may tend to hinder OSHA and CSR practices reporting based on the real activities management theory as this trend will minimize costs and expenses, therefore firms will not be subject to legal or union conflicts or will face no subsequent risk (Caskey and Ozel, 2017).

Second, managers could hinder OSHA and CSR practices reporting based on stakeholders' theory early presented by Hannan and Freeman (1984). This

theory implies that any conflict among stakeholders will definitely affect economic return, therefore when shareholders perceive OSHA and CSR programs as an additional unnecessary practice which negatively affects revenues and earnings. these practices may appeal to other stakeholders and look necessary to them, therefore, managers may tend to partially hinder these practices reporting (Orlitzky et al., 2003; Clarkson, 1995).

Third, OSHA and CSR practices reporting is supposed to affect future earnings (Averecadez, 2009). OSHA and CSR practices are practices that imply costs and expensed but for sure will generate revenues and returns, therefore, managers may tend to report these activities with no fear of any of the stakeholders.

Based on the previous indicators, the current study aimed to determine the effect of OSHA and CSR programs implementation on future earnings of Egyptian firms as future earnings is one of the main indicators of firms' financial performance which in return is an indicator of firms' values.

An exploratory research has been conducted through reviewing some the figures available in financial statements of firms listed in the CSR index. This exploratory research has shown that some of the firms' financial statements lack information about OSHA and CSR programs in spite of being listed in the index. This lack will definitely affect shareholders perception in short and long run. Therefore, the current study attempts to determine the effect of OSHA and CSR programs implementation on future earnings. Accordingly, this study attempts to answer the following questions:

- Does OSHA programs' implementation affect future earnings?
- Does CSR programs' implementation affect future earnings?

4/ Research objectives

The purpose of this research is to explore the role of OSHA and CSR program implementation in evaluating the firm performance (future earnings), and whether including OSHA and CSR information in ESG firms has any related effect with past earnings to firms future earnings. Therefore, the main objective of the study is to determine the effect of OSHA and CSR programs implementation on future earnings. This main objective is divided into the following subobjectives:

- Presenting a theoretical background of OSHA and CSR.
- Determining the effect of OSHA program implementation on future earnings.
- Determining the effect of CSR program implementation on future earnings.

5/ Research importance

The current study has practical importance both to managers of firms and to market practitioners. **First**, it's important to managers to realize the importance of OSHA and CSR programs reporting which will rationalize their decisions taking into consideration social and economic revenues which reflect sustainability adoption in addition to financial revenues. **Second**, it's important to investors to achieve a better understanding of the way the market processes when valuing firms using non-financial information side to side to different financial variables.

Also, the current study adds knowledge to Arabic library by merging between management and accounting knowledge which will improve financial reporting in Egyptian firms through enriching financial statement with numerous

non-financial information about OSHA and CSR programs that will enhance firms' value in current and potential consumers and customers minds.

The current study is inspired by work in new management and accounting literature (Yu and Zhao, 2015; Peattie and Collins, 2009; Gentry, 2007; Jones et al., 2007; Lorraine et al., 2004) which investigated the role of sustainability indicators to equity valuation with different methodologies and adopts the "association study" methodology to examine the effect of OSHA and CSR using RIV regression model.

6/ Theoretical background

6/1/ occupational safety and health administration:

In Egypt, the ministry of Public Health launched in 1936 and builds hundreds of healthcare units and polyclinics as services in Egypt. Following is Table (1) which illustrates the healthcare development in Egypt since 1809.

Table (1): Healthcare development in Egypt since (1809)

1809	Decree on prohibition of child work at cotton ginneries
1827	Establishing Kasr Al-Aini medical school;
1844	Bylaws organizing healthcare services;
1923	Constitutional rights to healthcare in the 1923 constitution;
1936	Launching the Ministry of Public Health;
1948	UN Declaration on Human Rights including Right to healthcare;
1956	Establish the High Institute of Public Health in Alexandria, with academic and applied functions,
1956	Establish the National Research Center in Giza, with academic and applied functions, emphasizing basic and advanced studies,
1959	Issuance of Labour Law 91/1959 with a Chapter on 'Industrial safety' issues and another Chapter on Social and cultural benefits for employees,
1959	Issuance of Social Insurance Law 92/ 1959 with Chapters on 'Health Insurance' benefits for employees,
1964	Establish the "Health Insurance Organization" to provide a wide-based Basic Benefit Package for various employees,
1969	Establish the National institute of Occupational safety and Health-NIOSH, for executing research, training, and technical consultancy,
1981	Issuance of Labor Law 137/ 1981 with a more comprehensive Chapter on Occupational safety and Health' issues,
1993	Establish supreme committee to control infectious dis.
2003	Issuance of the Unified Labor Law 12/ 2003 with a more advanced and comprehensive Book on Occupational safety and Health' issues,
2013	Modification of the national Schedule of Occupational Diseases to comply with the 2010- modified ILO list of Occupational Diseases,
2014	Draft amendments on Labor Law No. 12/ 2003 to include provisions in the ILO Conventions and Recommendations.

Source: Abo El-Ata (2014), p 26.

The law of occupational safety and health was adopted in the United States in 1970. It led to the reduction of injury rates among workers engaged in production and manufacture. Adequate organizational activities were developed to achieve the implementation of that law and were labeled as “Occupational Safety and Health Administration” which refers to an administration system designed for realizing the autonomous protection of workers, reducing injury rates and increasing productivity (Viscusi, 2007).

Occupational safety and health administration focuses on the objective of reducing work-related risks and is deemed a priority, whatever may be the associated cost. Kniesner and Leeth (2014) pointed out that U.S. firms spend on OSHA arrangements and procedures 4-5% of their profits, ranging in 2010 between 52 to 66 billion US dollars, after excluding the indirect costs arising from the effect of safety procedures on the speed of the working process and psychological protection which saves approximately 100000 US dollars.

Moreover, OSHA results for firms in savings on litigation and workers’ compensation costs, and restricts workers’ demands for higher wages. In addition, safety procedures raise future revenues and enhance investors’ expectations leading to an increased demand for firm’s shares, and to the reduction of labor rotation rates thus improving firm chances of keeping their skilled workers and attracting other efficient ones (Caskey and Ozel, 2017).

OSHA implementation procedures include penalties to be applied when the standard of labor quality provided by the firm deteriorates. Therefore, firms are keen to choose the labor quality inputs that influence workers’ behavior and determine, together with industrial security and health care measures, the level and implementation mechanism of the occupational safety and health system in

the firm (Desa et al., 2013). In order to abide by safety regulations, OSHA requires that regular inspection operations are carried out to investigate the number and nature of complaints and penalties, and calculate injury and sickness rates, and the frequency and acuity of their occurrence, as well as insurance premiums, via calculating the mutual workplace safety index business (Kniesnerand Leeth, 2014).

Although OSHA stresses strong points and raises the standard of labor quality, its main concern revolves around firm role, as represented by its administration, and its ability to implement the regulations and rules of safety and security; in addition to the efficiency of workers' behavior in this respect since many accidents can be traced to several causes related to the workers themselves, such as: Negligence, hastiness, inadvertence during work, and inadequate physical attitudes (Jain et al., 2018).

The study of Gordon and Lariviere (2014) on accident determinants concluded that 45% of work-related accidents result from workers' behavior and 30% from incidental risks; while the remaining 25% ratio is due to the workplace conditions such as inadequate lighting, noise, bad ventilation and the like. Therefore, occupational safety and health programs should concentrate on curing the aspects related to workers' behavior as the most influential factor in this respect.

The application of the OSHA 18001 standard aims at realizing the following objectives (McCaffrey, 2013; Hart, 2010):

- Establishing an occupational safety and health administration system to prevent or reduce labor risks within the corporation and for all other

concerned parties that may be exposed to the risks associated with the corporation's activities;

- Implementing, maintaining and constantly improving the occupational safety and health administration system;
- Providing a self-guaranty for the compatibility of the OSHA system applied by the corporation with the occupational safety and health policy declared by that corporation;
- Demonstrating to external entities the corporation's observance of the occupational safety and health requirements;
- Obtaining accreditation and registration of the occupational safety and health administration system through the competent entities; and
- Determination and self-announcement of the corporation's conformity with OSHA 18001.

6/2/ Occupational safety and health care programs:

Occupational safety and health care programs include two main branches: Health care programs and industrial security programs (Lingard and Rowlinon, 2004). **First**, Health care programs cover physical, psychological and mental health care in view of mitigating the negative effects resulting from the diseases and accidents incurred by workers and impairing their ability to satisfy basic or physiological needs (Lingard and Rowlinon, 2004). Health care programs physical health care programs, mental and psychological health care programs, and programs for the prevention of occupational diseases.

Furthermore, exhaustion is one of the most important and most common occupational diseases as it reflects workers' nervous and physical tension when they are exposed to excessive work pressures. Exhaustion has numerous causes;

some of them are directly related to work performance such as high working requirements, or the ambiguity or conflict inherent in the worker's role, or to other aspects such as being exposed to noise or facing complicated problems. Exhaustion may also result from personal problems facing workers such as financial difficulties, or being unsuccessful, getting old, interference between work rules and family demands, or trying to achieve perfection in all jobs (Gordon and Lariviere, 2014).

It is noteworthy that despite the importance of providing physical and psychological health care to workers, to cater to their physiological and safety needs, we must differentiate between offering medical services to employees in normal conditions – as a legal and moral obligation of the corporation- and the corporation 's right to fight sickness pretenses that affect productivity (Lingard and Rowlinon, 2004).

Second, Industrial security programs which is defined as the group of planned precautions developed by the organization to protect their employees, physically and psychologically, against work-related risks. Industrial security aims at providing a workplace free from industrial and environmental risks by applying the basic idea that “Prevention is better than cure.” Therefore, precautionary measures against work-relate risks are set-up to prevent accidents and save a lot of effort, money and resources (Hmeed and Hmeed, 2017). In Egypt, industrial security is not optional anymore as organizations are obliged by the State to provide the adequate means of industrial security in the workplace and to train their employees in specialized centers on how to use them efficiently.

Moreover, the World standard OSHA 18001 of 1999 sets precise specifications to help organizations maintain an occupational safety and health administration system. Hence, the organization has to issue a general policy approved by its higher administration to clearly determine the overall objectives of the system which must be in line with the nature and size of the risks threatening employees during the performance of their work for the organization. Furthermore, the implementation of that policy must observe all the laws and regulations to which the organization is subject (Rocha-Ibarra and Cisneros-Reyes, 2018). In addition, the organization shall essentially make sure that all employees are aware of that general policy, and shall periodically revise it to secure its adequacy to work performance in the organization (Servaes and Tamayo, 2012).

It is noteworthy to underline here the importance for the organization to set up and implement an industrial safety program in order to avoid paying large amounts of money in compensation for work-related accidents and injuries, as provided by the Egyptian Law of Labor No. 12 of Year 2003. In this regard, Gordone and Iariviere, (2014) explain that an accident is a sudden incident entailing a certain level of damage to the worker(s) or impairing equipment or resources; whereas an injury is the direct effect of an accident. An accident does not necessarily entail an injury.

6/3/ Social Responsibility:

The term “social responsibility” appeared at the beginning of the 1970’s and was essentially associated with trading firms; then it was extended to encompass all business organizations, in keeping with the emergence and propagation of the concept of “sustainable development.” (Nematullakzyand

Zhou, 2017). Hence, the scope of social responsibility gradually expanded from simple charity works to include protecting the rights of consumers, employees and all the organization stakeholders; in addition to influencing laws and legislations regulating business activities and their environment. (Luo et al., 2015). Social responsibility is defined as the organization's responsibility for the effects of its resolutions and activities on the community and the environment. Thus, the organization is required to adopt a moral behavior that contributes to enhancing sustainable development and improving the health and welfare of the community while taking into consideration all concerned parties and abiding by prevailing laws and international behavioral standards in all its dealings and relationships (Oktavia, 2018).

In other words, in order to adequately assume social responsibility, the organization is called to observe certain principles and requirements, the most important being the following: Transparency, accountability, moral behavior, international behavioral standards, respecting the interests of all stakeholders, observing prevailing laws and regulations, besides human rights (Servaes and Tamayo, 2013; Oh, et al., 2013).

Thus, it is obvious that providing occupational safety and health for employees represents a major part of the organization's social responsibility within the principles of respecting human rights and the interests of stakeholders, and adopting international behavioral standards in all the organization's policies and practices related to dealing with its employees, as stipulated by the World standard OSHA 18001 (Crenantoro, 2018; Koskela, 2014).

The social responsibility guidebook included several aspects of the organization's social responsibility which represent an integrated whole. These

aspects are the following (Hemphill, 2013): Corporate governance, environment, business practices, fair operating practices, community participation and development, and consumer issues.

7/ Research methodology

The research methodology will be covered through the research design, population, sampling, research model, and data collection.

7/1/ Research Design:

The current study adopted the quantitative research¹ approach which emphasizes quantification in collecting and analyzing data. Using quantitative strategy is motivated by the current study hypotheses. The current study hypothesizes effects of OSHA and CSR on firm future earnings. Consistent with managerial cost benefit approach Layard (1994) and Nas (2016), positivism of Robson (2011) and the positive accounting theory of Watts and Zimmerman (1986) the current study strategy aims to predict and explain the role of implementing OSHA and being a member in Egyptian CSR Index to firm valuation. Both managerial cost- benefit theory and positive accounting theory reflect two points of view:

First: For firm employee: it reflects employee safety for firm workers such as accident and injures compensation, governmental health care or any other health insurance paid by the firm will be a benefit employee appreciated to keep working in the firm and not moving to other firm with more better work condition.

¹Quantitative research is the systematic empirical investigation of observable phenomena via statistical, mathematical or computational techniques, *Given (2008)*.

Second: firms maintaining the same trained manpower and reducing labor turnover in exchange for carrying the costs of job security through the implementation of OSHA programs. Accordingly, the current study hypotheses are examined using RIV multiple regression effects model to assess the effect of sustainability and employee safety indicators on equity valuation in Egyptian firms. Over a time period of 13 years (2004-2017), we investigate changes in earnings affected and by OSHA and CSR sustainability and employee safety indicators.

Firm's data for (ESG) in Egyptian Stock Exchange has been used. Future earnings is measured by the earnings in the next year, and employee safety was measured by multiple measures (OSHA Certificate, ESG Index membership).

7/2/ Sample and data description

The research population is firms listed in the corporate social responsibility index in Egypt. It comprises of 20 firms which are listed in Egyptian Stock Exchange. The Egyptian Exchange is one of the oldest stock markets established in the Middle East, and dates back to 1883, when the Alexandria Stock Exchange was established, followed by the Cairo Stock Exchange in 1903. The Egyptian stock market is considered an emerging market. Egyptian accounting standards had been continually revised prior to 1997, when the Egyptian government issued a new set of accounting standards based primarily on the International Accounting Standards. Several revisions and amendment have been undertaken since then.

The Egyptian Institute of Directors, S&P Dow Jones Indices, and Crisil have created an Environment, Social and Governance (ESG) Index for Egypt. The purpose of the index is to raise the profile of those firms that perform well

along the three parameters of environmental, social and corporate governance responsibility when compared to their market peers. Linking stock market performance to ESG is perhaps the most effective way to highlight the concept of corporate-level Environment, Social and Governance responsibilities.

The process of creating this index is twofold. The first step is to define a multi-layered approach to creating an 'ESG' score for each firm. Often in the past, the approach has been to create such an index using subjective analysis, thereby limiting the complete transparency that is required to make an index attractive to some investors. The current idea is to stay away from subjective decisions and, instead, make decisions based on quantitative factors. The second step is to create an index which includes firms with the highest ESG scores. Its relative score determines firm weight in the index-firms carrying a higher score carry more weight. In addition, some weight is given to the size of each firm. A secondary threshold for selection is liquidity. Firm with a perfect ESG score but no market liquidity can become an impediment to the success of an index.

The sample excludes banks and financial institutions traded on the Egyptian Stock Market because they are committed to different accounting standards and practices. The full sample includes 12 firms, thus producing 156 firm-year observations.

The study data span a 13-year period, from 2004 to 2017², which comprise a panel cross section/time series data. Table (2) shows a summary of the sample composition.

²The Egyptian Institute of Directors (EIoD), Egyptian Corporate Responsibility Center, ECRC, Standard & Poor's (S&P) and Crisil created an Environment, Social and Governance (ESG) Index for Egypt. The S&P/EGX ESG Index that was launched on March 22nd 2010 is the first of its kind in the MENA region and the 2nd in the world. The first one was launched in India in 2008 and was created by Standard & Poor's (S&P) in collaboration with a local firm,

Table(2): Sample composition

N	Firm
1	Alexandria Mineral Oils
2	Sidi Kerir Petrochemicals- Sidpec
3	MOPCO - Misr Fertilizers Production Co.
4	ABU QIR Fertilizers and Chemicals
5	Amreyah
6	Arabia Cement
7	Alexandria Portland Cement
8	Orange Egypt
9	Telecom Egypt
10	Orascom Construction
11	Talaat Moustafa Group
12	Emaar Misr

(Source: CSR index in the Egyptian stock market)

The index base date is June 28, 2007. The base value, for both the US\$ and EGP series, is 1000. Daily returns are available from June 28, 2007 ³

7/3/ Research Model:

The current study hypotheses are examined using cross sectional test to assess the effect of employee safety indicators to future earnings in Egyptian firms over a time period of 13 years (2004-2017). The following model has been employed to measure each of the variables.

CRISIL.The Index was named "The Egyptian Corporate Responsibility Index.
<http://www.eiod.org/NewsDetails.aspx?ID=19>

³Source:http://www.ecrc.org.eg/backend/uploads/index/S_P%20EGX%20ESG%20Index.pdf

$$EPS_{it} = \beta_0 + \beta_1 OSHA_{it} + \beta_2 CSR_IDX_{it} + \beta_3 EPS_{it-1} + \beta_4 DIVID_{it} + \beta_5 SPS_{it} + \beta_6 LEV_{it} + \varepsilon_{it} \quad (1)$$

where:

- EPS_{it}: Earnings per share for firm i in year t
- OSHA_{it}: Occupational safety and health administration for firm i in year t
- CSR_IDX_{it}: Corporate social responsibility for firm i in year t
- EPS_{it-1}: Earnings per share for firm i in year t-1
- DIVID_{it}: Dividends per share for firm i in year t
- SPS_{it}: Net sale per share for firm i in year t
- LEV_{it}: Financial leverage for firm i in year t
- ε_{it}: Random error term for firm i in year t

Table (3) shows an overview of variables measurement

Table (3): An overview of variables measurement

Variable Name	Abbreviation	Measurement
Dependent Variable:		
Earnings Per Share	EPS _t	earnings for firm i for time t divided by number of shares in time in time t
Independent Variable:		
Occupational safety and health administration	OSHA	If the firm had the OSHA certificate (1) or not (0)
Corporate social responsibility	CSR	If the firm is a member in CSR index (1) or not (0)
Control Variables:		
Earnings Per Share	EPS _{t-1}	earnings for firm i for time t-1 divided by number of shares in time in time t-1
Dividends	DIVID	Dividends per share for firm i for time t
Net sale	SPS	Net sale per share for firm i for time t
Financial leverage	LEV	Total Debt/Total Assets

The current study addresses the effect of OSHA and CSR on firm valuation using Residual Income Valuation Model (RIV). RIV regression for earnings estimates the explanatory power (**pricing and contribution**) of independent variables (OSHA and CSR) in explaining the variance of dependent variable (Earnings) as value drivers. Guided by managerial cost-benefit approach by Layard (1994) and Nas (2016) and positivism of Robson (2011). This study uses quantitative research paradigm in test. This section presents an overview of the adopted method and data analysis models used for examining research questions and hypotheses.

7/4/ Data Collection:

Study data are collected from Egyptian Stock market, Egyptian Financial Supervisory Authority, and Egypt for Information Dissemination – EGID.

8/ Hypotheses testing results

Table (4) shows descriptive statistics (mean and standard deviation) for the study variables; earnings per share, earnings in the past year per share, dividends, leverage and net sales are in per share.

Table (4): Statistical Descriptive

Variable	Mean	Standard Deviation
Earnings per share	9	31.7
Past Earnings per share	8.4	31.3
Dividends per share	31.9	138.5
Leverage	24.6	1006.4
Net sale per share	24.6	26.8

As shown in table (4), means and standard deviations recorded reasonable values which supports the current study's objectives and hypotheses.

The effect of employee safety indicators on future earnings has been studied through testing two main hypotheses. Employee safety and firm valuation is a significant area of management and accounting research. Development in this area starts with the major importance of sustainability, sustainable production and consumption of resources by corporations that lead to improvement in the environment and also reduce its associated side effects (Global Reporting Initiative (GRIP), 2004).

This part summarizes and discusses the overall results reported in the preceding sector about the effect of employee safety to firm valuation in 12 firm, comprising 156 firm-year observations, cross sectional Egyptian firms from 2004 to 2017. To examine study hypothesis, tests are structure as follows:

First: Multiple regression model for OSHA: Earnings in time t are regressed using RIV model, on past earnings, OSHA, dividends, leverage and net sales using log regression⁴. The study model appears as follows:

$$EPS_{it} = \beta_0 + \beta_1 OSHA_{it} + \beta_2 EPS_{it-1} + \beta_3 DIVID_{it} + \beta_4 SPS_{it} + \beta_5 LEV_{it} + \epsilon_{it} \quad (2)$$

Second: Multiple regression model for CSR: Earnings in time t are regressed using RIV model, on past earnings, CSR I, dividends, leverage and net sales using log regression⁵. The study model appears as follows:

$$EPS_{it} = \beta_0 + \beta_1 CSR_IDX_{it} + \beta_2 EPS_{it-1} + \beta_3 DIVID_{it} + \beta_4 SPS_{it} + \beta_5 LEV_{it} + \epsilon_{it} \quad (3)$$

⁴-Study use logarithmic regression model because the main variables of the study, i.e., OSHA and CSR, were in a dummy variable form, and other dependent and independent variables were in a per share terms.

⁵-Study use logarithmic regression model because the main variables of the study, i.e., OSHA and CSR, were in a dummy variable form, and other dependent and independent variables were in a per share terms.

Table (5) shows regression model results (earnings regressed on earnings_{t-1} and OSHA as independent variable with dividends, leverage and net sales as control variables).

Table (5): OSHA regression results

Variables	Coefficient	Std. Err	T	Sig
EPS1	0.546	0.813	6.72	0.000
OSHA	0.330	0.197	1.6	0.050
DIV	0.140	0.061	2.28	0.025
LEV	-0.077	0.078	-1.00	0.322
NETSALES	0.159	0.086	0.01	0.991
F test 5.82 sig (0.000)				
Adj R² 78%				

As shown in table (5), Adj R² of OSHA model was 0.78 with OSHA dividends and leverage and net sales explain 78% percent of the variance in earnings.

Table (6) shows regression model results (earnings regressed on earnings_{t-1} and CSR as independent variable with dividends, leverage and net sales as control variables).

Table (6): CSR index regression results

Variables	Coefficient	Std. Err	T	Sig
EPS1	0.579	0.080	7.16	0.000
CSR	-0.370	0.181	-2.05	0.044
DIV	0.124	0.061	2.02	0.047
LEV	-0.101	0.080	-1.27	0.207
NETSALES	0.086	0.092	0.93	0.354
F test 5.82 sig (0.000)				
Adj R² 79%				

As shown in table (6), earnings_{t-1}, with CSR index, dividends, leverage and net sales explain 79% percent of the variance in earnings (Adj R² of CSR

model was 0.79). Earnings_{t-1} coefficient was in both models 0.546 (P= 0.000), 0.579 (P= 0.000) respectively, and is highly significant⁶.

The overall results from the effect of employee safety on future earnings indicate the importance role of employee safety. RIV model is used with cross sectional data set. Results indicate that, firm future earnings in Egyptian firms depend upon past earnings and employee safety indicators, namely OSHA and CSR. Also, current earnings cross sectional model do not depend only on past earnings.

Hypothesis results are shown in the following in Table (7).

Table (7): Hypotheses results of firm-fixed effects conditional regression

Hypothesis	Decision
H₁: A firm future earnings does not depend on OSHA implementation.	Rejected (0.050)*⁷
H₂: A firm future earnings does not depend on CSR implementation.	Rejected (0.04)*

As shown in table (7), both null hypotheses were rejected, therefore the alternative hypotheses were accepted implying that future earnings depend on OSHA and CSR programs.

9/ Discussion:

The current study's main objective is to determine the effect of OSHA and CSR programs separately on future earnings. Results have shown that OSHA activities significantly affect future earnings for firms listed in the Egyptian stock market which implies that the reluctance of firms to report about

⁶-At first we check regression model assumptions for both models which were satisfied.

⁷*- significance

OSHA activities to avoid stakeholders' refusal is a wrong attitude. On the contrary, adoption and attention of OSHA activities implies several expenses but in the same time guarantees several outcomes such as more productivity, less absenteeism, less injury compensations, skilled employees' retention, and less work turnover.

Results also showed that CSR activities has a positive significant effect on future earnings which implies that costs and expenses associated with CSR are highly compensated with much more revenues and earnings. Indeed, society members specially customers had shown lots of support to firms practicing social responsibility activities in the form of loyalty, recommendation, and positive word of mouth.

Based on the cost-benefit theory, all OSHA and CSR activities imply costs but also generates lots of benefits which exceed costs and compensate all expenses. These results are partially in accordance with Cormier and Magman (2007) as they argued that environment and social programs reported in Germany, Canada, and France positively affects firms' value. Moreover, Greeves and Ladipo, (2004) and Schadewitz and Niskala (2010) argued that occupational safety and health administration and corporate social responsibility programs positively affected firms' financial performance, future earnings, and shares prices. Finally, the current study's results confirmed the results of Cardamone et al. (2012) which confirmed that occupational safety and health administration and corporate social responsibility programs reporting significantly affects shares' prices and stakeholders' evaluations of future shares' prices.

On the other hand, the current study's results are in contradiction partially with Zulni (2013) who assured that corporate social responsibility programs implementation has no effect on future earnings.

10/ Recommendation:

Based on the results and its related discussion, several recommendations have been presented as follows.

- 1- OSHA financial reports should be separated from CSR financial reports. OSHA activities should be accounted for as a separate part from other activities and not as apart from CSR programs. This reflects that OSHA isn't an option will be executed if there is enough finance or will be delayed if there is not; rather, it is an obligation on management with no hesitation or vacillation.
- 2- Firms should follow quantitative accounting reporting about OSHA programs costs and benefits separately from other CSR programs and other firm programs. This in accordance with sustainability international standards ESTES. This will enable firms to assess OSHA programs in terms of deficit or surplus. This will enhance firm's reputation and encourage local and international investors.
- 3- A governmental institution or agency is recommended to be established to monitor firms' execution of OSHA programs and the extent of their commitment to OSHA standards.
- 4- Cooperation with insurance agencies is recommended to enhance firms' performance of OSHA programs and help in these programs' expenses.

5- A database of accidents and injuries that happen in work place, related protection procedures, and compensations given to victims should be developed on a daily basis.

11/ Limitation

Despite of the contribution this study provided to knowledge in accounting and management, there are some limitations.

- This study had covered a 13 years period in Egypt starting from 2004 and ending up with 2017. This period has witnessed several fluctuations and disturbances such as World Financial Crisis 2008, January revolution 2011, and June revolution 2013. These disturbances have affected efficiency of accounting information available in this period.
- Sample size (156 observations) is obviously small. It has to be that size after excluding banks, financial institutions, other institutions with unavailable data, and dollar institutions which ended up with 12 firms out of the 20 listed firms (60% of the listed firms in CSR indicators).
- Some observations are missed from some years and from some firms.

12/ Future Research

Replications of the current study are needed to validate the current study results. Future research also may test perceived effect of employee safety to managers which will indeed result in voluntary reporting about safety of the firm. A future research also may address longitudinal changes and investigate other employee safety indicators such as injures times in the firm and employee safety reporting in financial report⁸ in assessing their conditioning

⁸-Current study did not test those indicators because it did not find sufficient reported information in sample firm financial statements.

potential effect on employee safety indicators predictive ability regarding firm valuation.

In Egypt, as an emerging economy, occupational, safety and social responsibility programs are serious concern increasingly recognized as a trend in research in Egyptian Exchange Market. Although some firms are primarily within the CSR index (ESG Index) which implicitly means that these firms adhere to occupational and safety procedures, firms do not report in the financial reports any information related to their employees' occupational and safety programs or any information about environmental programs.

It is obvious that from literature review that:

- Most of the previous studies whether Arabic or English have studied occupational safety and health administration as one of the branches of corporate social responsibility not a separate activity.
- Most of the previous studies have focused on the effect of corporate social responsibility activity or occupational safety and health administration programs on financial performance separately. Their effect on corporate image and revenues had been also studied on a separate manner.
- Only one study has focused on exploring the effect of corporate social responsibility activity or occupational safety and health administration programs on future earnings.

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