

MULTIDIMENSIONAL METRICS FOR MEASURING SOCIAL AND SUSTAINABLE FINANCE PERFORMANCE

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Abstract: *Performance is significant not only in the business world, but also to society as a whole. However, performance is traditionally assessed from the one-dimensional aspect of monetary gains. This chapter will first discuss multidimensional performance measurements and expand on the need for ethics in reporting and measuring social and sustainable performances, and will then develop a new approach that links performance to ethics as applied to social and sustainable finance.*

First, this chapter will develop three-dimensional metrics to measure ethical performance based on the definition of sustainability. Next, these metrics will be generalized using the objectives of Islamic law explained in Bedoui (2012) and Bedoui and Mansour (2015)'s model, with multidimensional metrics. Such a system ensures that any firm or organization can ethically promote human welfare, prevent corruption, and enhance social and economic stability, instead of simply maximizing its own performance in terms of financial returns. A measurement of ethical performance will be developed, demonstrating that a firm or organization that evaluates financial performance alone at the expense of ethical aspects will perform poorly.

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Introduction

The particular question of ethical performance is essential in social and sustainable finance. The goal of this article is to study current metrics and their impact, then to go a further step by suggesting a new multidimensional metric for assessing these performances. Social finance aims to solve social or environmental challenges while generating financial returns. It is sustainable finance with a social or environmental goal (Antadze et al. 2009). It exists on the financial continuum between charity (social returns and no financial returns) and conventional finance (usually high financial returns with no social returns). "Social enterprises," therefore, also produce financial results. They have the dual purpose of generating income and creating a social, environmental, or ethical value. The key driver of social and sustainable finance is ethics. The first section of this article will investigate the interplay between ethics and economics, highlighting the exchange between both financial and non-financial performances as a way to link economic performance to ethical performance. Bedoui and Mansour (2015)'s framework

will be applied to social and sustainable finance. This framework will be applied using the common three dimensions and then expanded to include additional dimensions. The last section will discuss the application of the framework to social and sustainable finance and will lead into the conclusion for this paper.

Ethics and economics

According to the Concise Oxford Dictionary, ethics is defined as “the science of morals, treatise on this, moral principles or rules of conduct” (1964: 415). The Cambridge Dictionary of Philosophy defines ethics as “commonly used interchangeably with morality and sometimes it is used narrowly to mean the moral principles of a particular tradition, group, or individual.” Ethics is considered synonymous with social conventions and beliefs. Indeed, Paul and Elder (2009) argue that ethics is “a set of concepts and principles that guide us in determining what behavior helps or harms sentient creatures.” Furthermore, the authors claim that “most people confuse ethics with behaving in accordance with social conventions, religious beliefs, and the law.”

The study of the interplay between economics and ethics is not recent. Smith (1776[1952]) argued that “people of the same trade seldom meet together, even for merriment or diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices”. Because of its positive individual and community effects, ethics have continuously driven scholars and leaders to improve their role in society (Samadi & Mahdavi Khou, 2009). The study of ethics changed the interaction between profit-oriented and non-profit-oriented behavior. Corporations embed ethics through their commitment to non-profit values (e.g., socially responsible investments, ethical codes) that promote happiness, equality, liberty, or the will of God.

Drivers for ethical performance measurement and reporting

Although the study of ethics and its applications is fairly recent, ethics originated from the Greek philosophers. Socrates (469 B.C.–399 B.C.) incited Athena’s citizens to focus on the condition of humankind by claiming that knowledge must have the highest place in society. Self-knowledge was highly valued in society and was the source of good actions. Indeed, self-knowledge was required, as self-aware individuals would act according to their reality to reach the culmination of knowledge, therefore allowing their actions to be good because they knew what was right.

Nowadays, current economic growth has its own costs (increasing pollution, inequality (Stiglitz, 2012; Piketty, 2014), which adds more complexity and ambiguity to decision-making with different stakeholders. Given the intricacy of today’s economy, firms’ stakeholders need to know more compared to their ancestors. Their expectations have changed considerably in recent decades. They yearn for relevant, simplified knowledge that increases clarity and visibility. According to Socrates, knowledge is closely related to social virtues; therefore, self-knowledge leads to ethics. The latter is considered an indicator of a society’s health.

Traditionally, financial returns have been perceived as the ideal performance measurement. However, (Al-Tuwaijri, Christensen, & Hughes II, 2004; Barth & McNichols, 1994; Berthelot, Coulmont, & Serret, 2012; Clarkson, Li, & Richardson, 2004) concluded that ethical and non-financial information is similarly relevant.

Some management roles exist mainly to increase shareholders' and managers' wealth. Knowing that some stakeholders have more power to influence management, its role, then, is to balance stakeholder demands with the strategic objectives of the firm or organization. Given that managers are accountable for providing information and that stakeholders have a right to know about the various social and environmental implications of a firm's operations, public disclosure of information concerning the firm's impact on and connection to the market can be requested to inform and educate relevant stakeholders about current changes to performance and operations.

Customers and society in general expect certain conduct from firms. Some investors continually ask for information about firms and organizations. Consequently, several firms or organizations publicly disclose non-financial information about their social and environmental performance. They deliver then further information, creating an expansion of knowledge in the existing market. Other investors (who did not ask questions) will also receive this additional information. As societal expectations change, firms have to adapt and change as well. In order to be sustainable, they should establish congruence between their activities and the norms of acceptable behavior in the society.

Figge, Hahn, Schaltegger, and Wagner (2002) considered that firms should incorporate environmental and social aspects into sustainability management. A large number of researchers found that being a first mover and implementing a proactive environmental strategy was valuable and suggested that firms can gain sustainable competitive advantages through better environmental practices, consequently increasing performance. For instance, an improved firm performance can be facilitated through process innovation and product differentiation (Hart, 1995; Porter & van der Linde, 1995). Firms may lose stakeholder support if they damage the environment, so they tend to contribute to environmental and social development to some extent.

Nowadays, regulation of social and environmental performance reporting is minimal. However, with a changing market and needs, performance-reporting practices may be introduced or increased to prepare for the possibility that governments will impose additional heavy reporting requirements.

To Sum up, Epstein and Yuthas (2014) concluded that there are three main purposes to measure:

- a) Measure for learning: to understand performance and to test assumptions.
- b) Measure for action: to guide behavior and to communicate values.
- c) Measure for accountability: to report performance and to build relationships.

Link between financial and ethical non-financial performances

ESG (environmental, social, and governance) is defined by Financial Times lexicon as a generic term used in capital markets and by investors to evaluate a firm's behavior. ESG factors are a subset of non-financial performance indicators that include sustainable, ethical, and corporate governance issues. ESG issues affect both long- and short-term shareholder value.

Early studies show that there is a relationship between environmental issues and share prices (e.g., the Exxon Valdez oil spill in 1988). Recent empirical economic analysis examines the effect of environmental performance on financial performance (Al-Tuwarijri et al., 2004; Clarkson, Li, Richardson, & Vasvari, 2008; Elsayed and Paton, 2005; Heflin and Wallace, 2014; Hughes, 2000; Jaggi and Freedman, 1992; Johnston, 2005; Konar and Cohen, 2001; Palmer,

Oates, & Portney, 1995; Telle, 2006; Walley and Whitehead, 1994). For instance, a poor environmental performance can negatively affect different assets. These poor performances can cause considerable damage to a company's reputation. Chun (2005) found different views on the nature of corporate reputation in a variety of literature. Reputation was seen as an intangible asset with financial worth.

Early studies reasoned that additional costs to firms were the price to pay for a better environmental performance (Palmer et al., 1995; Walley and Whitehead, 1994). Nevertheless, recent research argues that there is positive link between environmental performance and financial performance (Guenster, Bauer, Derwall, & Koedijk, 2011; Konar and Cohen, 2001). Furthermore, Derwall, Guenster, Bauer, and Koedijk (2005) and Clarkson, Li, Richardson, and Vasvari (2011) concluded that an enhanced environmental performance increases corporate efficiency, and that it "does pay to be green."

Social and sustainable finance metrics

The issues facing firms today are how to measure ethics, how to measure social and sustainable financial performances, and the challenge of quantifying ethics. In the late eighties, Reidenbach and Robin (1988, 1990, 1993, 1995) were the leading scholars attempting to multidimensionally quantify ethics. More recently, the United Nations Environment Programme [UNEP] (2006) concluded that the impact of ESG issues on share price could be valued and quantified. Presently, ethics measurements have matured and have been tested using different models and frameworks. For instance, the European Sustainable Investment Forum [Eurosif] (2012) concluded that socially responsible investing (SRI) is booming in the European and American markets. SRI is known as sustainable, socially conscious, "green," or ethical investing, seeking to consider both financial and ethical (social good) returns.

According to OECD (2007a), the factors considered by SRI investors fall into three main categories: The social dimension includes community development, labor rights, and human capital (training and education, working conditions, and health). The environmental dimension consists of pollution, global warming, and damage to and the decline of the planet's flora and fauna, among other items. Lastly, the ethical dimension encompasses traditional ethical concerns relating to pornography, alcohol, and gambling, as well as violations of human rights, use of child labor, weapon manufacturing, slavery, and forced prostitution. Epstein and Buhovac (2014) considered that by including social, environmental, and economic indicators in performance measurement and evaluation, firms and organizations can get some benefits: a) Comparing performances over time. b) Highlighting of optimization potential. c) Deriving and pursuing of social, environmental, and economic targets. d) Benchmarking: evaluation of sustainability performance between firms. e) Communicating for corporate reports. f) Motivating the workforce. g) Informing in order to change managerial actions and to improve performance.

To summarize, investors and different stakeholders use various metrics, including ESG screens and metrics, social return on investment (SROI), the Impact Reporting and Investment Standards (IRIS) developed by the Global Impact Investing Network (GIIN), and GIIRS (Global Impact Investing Rating System).

Ethical metrics: the third dimension

As seen previously, the major metrics used in social and sustainable finance are based on the triple bottom line, a term coined by John Elkington in 1994 according to The Economist (2009). The triple bottom line is an accounting framework with three parts or “pillars” of sustainability, also called the three Ps: people (social), planet (environmental), and profit (financial). The three pillars come from a report¹ by the United Nations’ World Commission on Environment and Development (WCED) in 1987 that adopted the concept of sustainability and made it commonly recognized. Sustainability or sustainable development has been commonly defined as “economic and social development that meets the needs of the current generation without undermining the ability of future generations to meet their own needs.”

In this chapter, an innovative three-dimensional metric is applied using the above definition of sustainability. Bedoui (2012) and Bedoui and Mansour (2015) developed a multidimensional performance measurement. That framework can be applied in the third dimension, where each of the three pillars (environmental, social, and economic) can be viewed. Each firm’s performance can be pictured as follows.

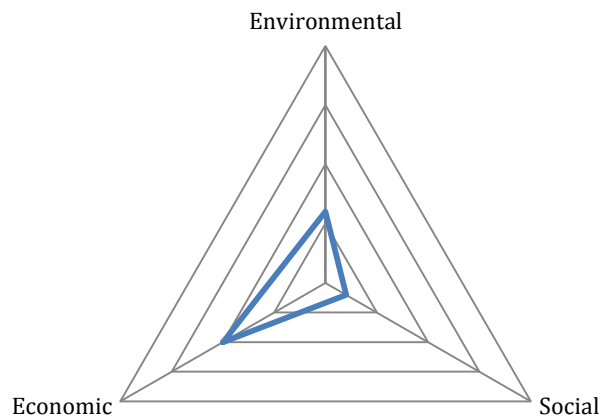


Figure 1. Three-pillar triangle-shaped performance, *Source: Author*

Figure 1 shows a triangle. Each angle corresponds to one of the three pillars. The central point of the triangle corresponds to zero. A firm or organization that does not strive to meet any objectives does not exhibit any performance measurements. Moreover, this graphic representation allows a rating and comparison of different firms as represented in Figure 2 below.

¹ This report known nowadays by the name of the chairperson: “Brundtland Report”

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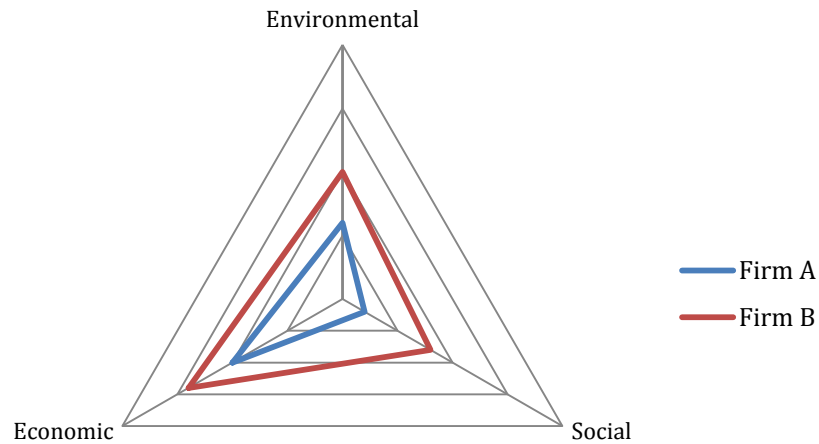


Figure 2. Graphic comparison of performances of Firms A and B, *Source: Author*

Bedoui (2012)'s idea was to compute the area inside the triangle to produce the three-pillar global performance $GP(3)$.

$$GP(3) = \frac{\sin\left(\frac{2\pi}{3}\right)}{2} \left(\sum_{i=1}^{i=2} p_i p_{i+1} + p_1 p_3 \right) = \frac{\sqrt{3}}{4} (p_1 p_2 + p_2 p_3 + p_1 p_3)$$

(1)

Knowing that: p_1 is the performance of the first pillar (environment),

p_2 is the performance of the second pillar (social),

p_3 is the performance of the third pillar (economic):

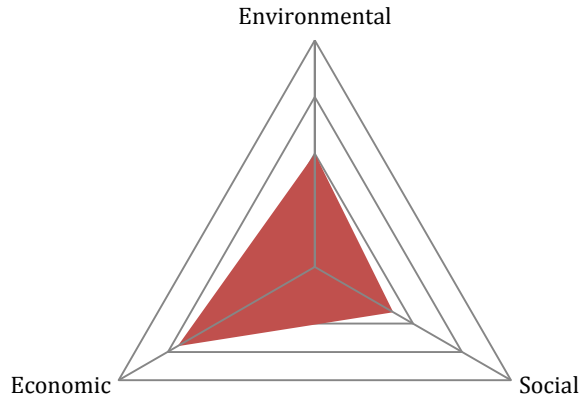


Figure 3. Global performance (3) representation, *Source: Author*

Bedoui (2012) envisaged the case of an equal performance, i.e., $p = p_i, \forall i$. Equation 1 reduces to the following equation of balanced global performance (BGP(3)):

$$BGP(3) = \frac{3\sqrt{3}}{4} p^2. \tag{2}$$

If the firm performs equally across all three pillars, then its performance is balanced and its quantitative value is defined using Equation 2. The mathematical expressions for GP and BGP could be different if it is further supposed that firms do not balance all objectives equally. Imagine a weight of $0 < w_i \leq 1$ is assigned to each i^{th} objective. We suppose that $\sum_1^3 w_i = 1$. The weight could depend on the specific characteristics of the firm and its industry. Some industries could give more weight to one or more objectives compared to the others, which might affect performance differently from one industry to another. Indeed, some industries are more sensitive to certain objectives compared to others. Accordingly, including weighted values in the equation of GP gives more flexibility to the interpretation of performance.

The GP in Equation 1 generates the following expression for weighted global performance (WGP).

$$WGP(3) = \frac{\sqrt{3}}{4} (w_1 p_1 w_2 p_2 + w_2 p_2 w_3 p_3 + w_1 p_1 w_3 p_3). \tag{3}$$

WGP(3) is industry sensitive. It further reflects the firm's performance by taking into account its specific characteristics. The weighting gives a better interpretation of performance. For instance, an environmental firm will give a higher weighting to pillar 1, environment.

We also could transform WGP into a balanced weighted global performance (BWGP), similar to the interpretation of GP in terms of equal performances, which gives BGP. Assuming that the weighting is the same for all objectives, that is, that the firm gives the same importance to all three pillars of performance, we have:

$$BWGP(3) = w^2 \frac{\sqrt{3}}{4} (p_1 p_2 + p_2 p_3 + p_1 p_3). \quad (4)$$

Since $\sum_1^n w_i = 1$ and $w_i = w, \forall i = 1,2,3$, then $w = \frac{1}{3}$. Accordingly, Equation 4 reduces to:

$$BWGP(3) = \frac{\sqrt{3}}{36} (p_1 p_2 + p_2 p_3 + p_1 p_3). \quad (5)$$

The latter equation is the mathematical expression of global performance when the weighting is balanced. This means that all performances have the same importance from the perspective of the firm's specific characteristics and depend on its sector's characteristics. It is possible to extend the expression of BWGP. If the variable p_i in Equation 6 is equal to $p, \forall i$, then global performance is balanced twice. Consequently, it is possible to derive double-balanced weighted global performance, DBWGP, which amounts to:

$$DBWGP(3) = \frac{3\sqrt{3}}{4} p^2 w^2. \quad (6)$$

Since $w = \frac{1}{3}$ then Equation 6 reduces to:

$$DBWGP(3) = \frac{\sqrt{3}}{12} p^2. \quad (7)$$

The quantification of global performance is based on the proxies for each of the three pillars' performances and the weighting factor associated with that pillar.

Ethical metrics: the fifth dimension

The rationale behind social and sustainable measurement is to facilitate better results. Epstein and Yuthas (2014) argue that many organizations don't measure because they don't know how; others claim that measurement can be misleading. Improving the measurement will help firms add more value. Social and sustainable finance has raised awareness and improved conventional perceptions by adding additional measures to the traditional measurement of financial performance. Considering environmental, social, and governance aspects is no longer innovative. However, further metrics are needed to ensure that companies are generating more value for all stakeholders, improving market transparency, and mobilizing more resources.

Setting up clear impact objectives and aiming to achieve them will help impact-driven firms to produce improved results. In this regard, Bedoui and Masour (2014) suggested a pentagon-shaped performance model that establishes five strategic objectives. It consists of protecting and safeguarding the following: 1) the human self; 2) faith; 3) intellect; 4) posterity (or procreation); and 5) wealth (or property). Accordingly, each firm will assess its impact based on these five objectives. Each firm's performance can be pictured using the following pentagon of the five pillars shown in Figure 4.

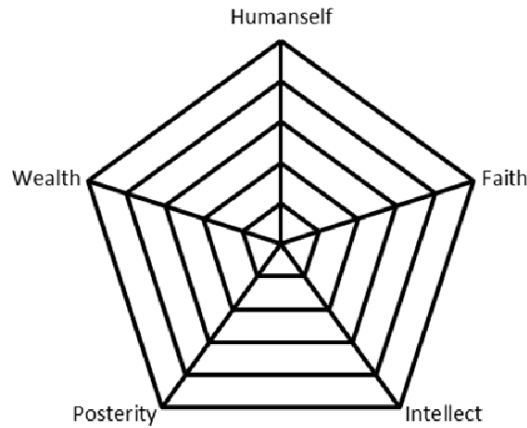


Figure 4. Five-point pentagon-shaped *maqasid al-shari'ah* performance, Source: Bedoui and Mansour 2015

Again, Bedoui and Mansour (2015)'s idea was to compute the area inside the pentagon to produce the five-pillar global performance GP (5).

$$GP(5) = \frac{\sin\left(\frac{2\pi}{5}\right)}{2} \left(\sum_{i=1}^{i=4} p_i p_{i+1} + p_1 p_5 \right) = \frac{\sin\left(\frac{2\pi}{5}\right)}{2} (p_1 p_2 + p_2 p_3 + p_3 p_4 + p_4 p_5 + p_5 p_1). \quad (8)$$

Knowing that: p_1 is the performance of the first pillar (Human self),
 p_2 is the performance of the second pillar (Faith),
 p_3 is the performance of the third pillar (Intellect):
 p_4 is the performance of the fourth pillar (Posterity):
 p_5 is the performance of the fifth pillar (Economic/Wealth).

Bedoui and Mansour (2015) envisaged the case of an equal performance, i.e., $p = p_i, \forall i$. Equation 8 reduces to the following equation of balanced global performance (BGP(5)):

$$BGP(5) = \frac{5}{2} \sin\left(\frac{2\pi}{5}\right) p^2 \quad (9)$$

If the firm performs equally across all five pillars, then its performance is balanced and its quantitative value is defined using Equation 9. The mathematical expressions for GP and BGP could be different if it is further supposed that firms do not balance all objectives equally. Imagine a weight of $0 < w_i \leq 1$ is assigned to each i^{th} objective. We suppose that $\sum_1^5 w_i = 1$. The weight could depend on the specific characteristics of the firm and its industry. Some industries could give more weight to one or more objectives compared to the others, which might affect performance differently from one industry to another. Indeed, some industries are more sensitive to certain objectives compared to others. Accordingly, including weighted values in the equation of GP gives more flexibility to the interpretation of performance.

The GP in Equation 8 generates the following expression for weighted global performance (WGP).

$$WGP(5) = \frac{\sin\left(\frac{2\pi}{5}\right)}{2} \left(\sum_{i=1}^{i=4} p_i p_{i+1} w_i w_{i+1} + p_1 p_5 w_1 w_5 \right). \quad (10)$$

WGP(5) is industry sensitive. It further reflects the firm's performance by taking into account its specific characteristics. The weighting gives a better interpretation of performance.

We also could transform WGP into a balanced weighted global performance (BWGP), similar to the interpretation of GP in terms of equal performances, which gives BGP. Assuming that the weighting is the same for all objectives, that is, that the firm gives the same importance to all five pillars of performance, we have:

$$BWGP(5) = w^2 \frac{\sin\left(\frac{2\pi}{5}\right)}{2} \left(\sum_{i=1}^{i=4} p_i p_{i+1} + p_1 p_5 \right). \quad (11)$$

Since $\sum_1^n w_i = 1$ and $w_i = w, \forall i = 1, 2, 3, 4, 5$ then $w = \frac{1}{5}$. Accordingly, Equation 11 reduces to:

$$BWGP(5) = 0.02 \sin\left(\frac{2\pi}{5}\right) \left(\sum_{i=1}^{i=4} p_i p_{i+1} + p_1 p_5 \right). \quad (12)$$

The latter equation is the mathematical expression of global performance when the weighting is balanced. This means that all performances have the same importance from the perspective of the firm's specific characteristics and depend on its sector's characteristics. It is possible to extend the expression of BWGP. If the variable p_i in Equation 12 is equal to $p, \forall i$, then global performance is balanced twice. Consequently, it is possible to derive double-balanced weighted global performance, DBWGP, which amounts to:

$$DBWGP(5) = \frac{5}{2} \sin\left(\frac{2\pi}{5}\right) p^2 w^2. \quad (13)$$

Since $w = \frac{1}{5} = 0.2$, then Equation 13 reduces to

$$DBWGP(5) = 0.1 p^2 \sin\left(\frac{2\pi}{5}\right). \quad (14)$$

The quantification of global performance is based on the proxies for each of the five pillars' performances and the weighting factor associated with that pillar.

Ethical metrics: the eighth dimension

Bedoui and Mansour (2015) extended the Pentagon-shaped performance with Al-Najjar (2006) approach. Indeed, the latter considered the following objectives:

- Safeguard the value of human life (faith and human rights);
- Safeguard of human self (self and mind);
- Safeguard the value of society (prosperity and social entity); and
- Safeguard of physical environment (wealth and environment).

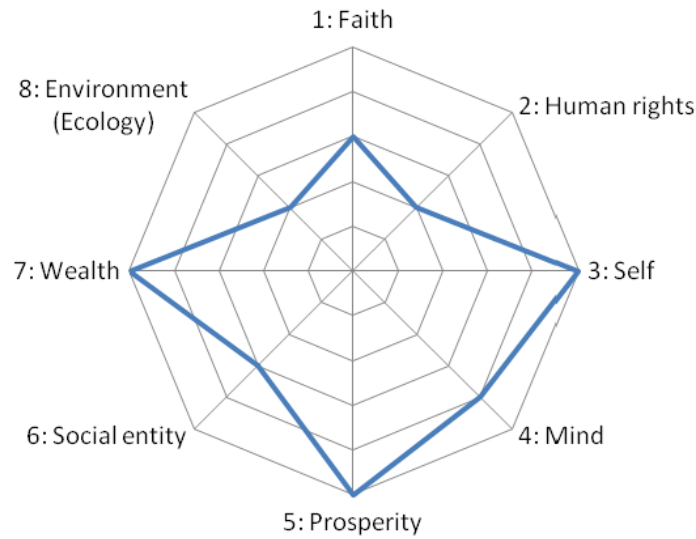


Figure 5. Octagon-shaped performance, *Source: Bedoui and Mansour (2015)*

Once more, Bedoui and Mansour (2015)'s idea was to compute the area inside the octagon to produce the eight-pillar global performance $GP(8)$.

$$GP(8) = \frac{\sin\left(\frac{2\pi}{8}\right)}{2} \left(\sum_{i=1}^{i=7} p_i p_{i+1} + p_1 p_8 \right) = \frac{\sqrt{2}}{4} \left(\sum_{i=1}^{i=7} p_i p_{i+1} + p_1 p_8 \right). \quad (15)$$

Knowing that: p_1 is the performance of the first pillar (Faith),
 p_2 is the performance of the second pillar (human rights),
 p_3 is the performance of the third pillar (Human self),
 p_4 is the performance of the fourth pillar (Human mind),
 p_5 is the performance of the fifth pillar (posterity),
 p_6 is the performance of the sixth pillar (social entity),
 p_7 is the performance of the seventh pillar (Wealth),
 p_8 is the performance of the eighth pillar (Environment):

Bedoui and Mansour (2015) envisaged the case of an equal performance, i.e., $p = p_i, \forall i$. Equation 15 reduces to the following equation of balanced global performance (BGP(8)):

$$BGP(8) = \frac{8\sqrt{2}}{4} p^2 = 2\sqrt{2} p^2. \tag{16}$$

If the firm performs equally across all five pillars, then its performance is balanced and its quantitative value is defined using Equation 16. The mathematical expressions for GP and BGP could be different if it is further supposed that firms do not balance all objectives equally. Imagine a weight of $0 < w_i \leq 1$ is assigned to each i^{th} objective. We suppose that $\sum_1^8 w_i = 1$. The weight could depend on the specific characteristics of the firm and its industry. Some industries could give more weight to one or more objectives compared to the others, which might affect performance differently from one industry to another. Indeed, some industries are more sensitive to certain objectives compared to others. Accordingly, including weighted values in the equation of GP gives more flexibility to the interpretation of performance.

The GP in Equation 15 generates the following expression for weighted global performance (WGP).

$$WGP(8) = \frac{\sin\left(\frac{2\pi}{8}\right)}{2} \left(\sum_{i=1}^{i=7} p_i p_{i+1} w_i w_{i+1} + p_1 p_8 w_1 w_8 \right) = \frac{\sqrt{2}}{4} \left(\sum_{i=1}^{i=7} p_i p_{i+1} w_i w_{i+1} + p_1 p_8 w_1 w_8 \right). \tag{17}$$

WGP(8) is industry sensitive. It further reflects the firm's performance by taking into account its specific characteristics. The weighting gives a better interpretation of performance.

We also could transform WGP(8) into a balanced weighted global performance (BWGP), similar to the interpretation of GP in terms of equal performances, which gives BGP. Assuming that the weighting is the same for all objectives, that is, that the firm gives the same importance to all five pillars of performance, we have

$$BWGP(8) = w^2 \frac{\sqrt{2}}{4} \left(\sum_{i=1}^{i=7} p_i p_{i+1} + p_1 p_8 \right) \tag{18}$$

Since $\sum_1^n w_i = 1$ and $w_i = w, \forall i = 1, 2, 3, 4, 5, 6, 7, 8$ then $w = \frac{1}{8}$. Accordingly, Equation 18 reduces to

$$BWGP(8) = \frac{1}{64} \frac{\sqrt{2}}{4} \left(\sum_{i=1}^{i=7} p_i p_{i+1} + p_1 p_8 \right) = \frac{\sqrt{2}}{256} \left(\sum_{i=1}^{i=7} p_i p_{i+1} + p_1 p_8 \right). \tag{19}$$

The latter equation is the mathematical expression of global performance when the weighting is balanced. This means that all performances have the same importance from the perspective of the firm's specific characteristics and depend on its sector's characteristics. It is possible to extend the expression of BWGP. If the variable p_i in Equation 19 is equal to $p, \forall i$, then global performance is balanced twice. Consequently, it is possible to derive double-balanced weighted global performance, DBWGP, which amounts to

$$DBWGP(8) = 8 p^2 w^2 \frac{\sqrt{2}}{4} = 2\sqrt{2} p^2 w^2 \quad (20)$$

Since $w = \frac{1}{8}$, then Equation 20 reduces to

$$DBWGP(8) = \frac{8\sqrt{2}}{256} p^2 = \frac{\sqrt{2}}{32} p^2. \quad (21)$$

The quantification of global performance is based on the proxies for each of the five pillars' performances and the weighting factor associated with that pillar.

Ethical metrics: the N dimension

Bedoui and Mansour (2015) suggested generalized mathematical expressions of global performance under its various forms (i.e., balanced and weighted),

The firm or the organization has n objectives ($n \geq 3$), which means that the graph has n axes.

$$GP(n) = \frac{\sin\left(\frac{2\pi}{n}\right)}{2} \left(\sum_{i=1}^{i=n-1} p_i p_{i+1} + p_1 p_n \right). \quad (22)$$

$$WGP(n) = \frac{\sin\left(\frac{2\pi}{n}\right)}{2} \left(\sum_{i=1}^{i=n-1} p_i p_{i+1} w_i w_{i+1} + p_1 p_n w_1 w_n \right). \quad (23)$$

$$BWGP(n) = w^2 \frac{\sin\left(\frac{2\pi}{n}\right)}{2} \left(\sum_{i=1}^{i=n-1} p_i p_{i+1} + p_1 p_n \right). \quad (24)$$

$$BWGP(n) = \frac{\sin\left(\frac{2\pi}{n}\right)}{2n^2} \left(\sum_{i=1}^{i=n-1} p_i p_{i+1} + p_1 p_5 \right). \quad (25)$$

$$DBWGP(n) = \left(\frac{p^2}{2n}\right) \sin\left(\frac{2\pi}{n}\right). \quad (26)$$

The set of equations (Eq. (1) - Eq. (26)) gives a quantitative interpretation of *maqasid al-shari'ah*'s vision of ethical performance relevant in social and sustainable finance.

Discussion:

Bedoui and Mansour (2015)'s starting point for their objectives (from Equation 7 to Equation 14) was Islamic Law.² This led to reflection about the role of religion in social and sustainable finance and to what extent this model is applicable for non-Islamic firms or finance.

Socially conscious investment dates back centuries, with religions informing adherents about how to invest ethically. For instance, in biblical times, Jewish laws laid down directives on how to invest according to ethical values, while Quakers have long practiced socially responsible investing, based on their beliefs in human equality and nonviolence. The roots of today's socially responsible investing (SRI) are repeatedly traced to investors in the early 1900s, who avoided investing in tobacco, alcohol, or gambling companies for religious reasons (OECD, 2007b). In Islam, *shari'ah* is the set of religious laws and moral codes. It is considered the central, primary source for *fiqh* scholars.³ It is identified as a set of ethical values covering all aspects of life (personal, social, political, economic, and intellectual). *Shari'ah* is usually divided into three main subfields, namely *aqidah* (beliefs), *ibadah* (worship), and *akhlak* (morals and ethics). Ethical values are therefore an integral part of *shari'ah*. The term *maqasid al-shari'ah* is often literally translated as "the goals of *shari'ah*." *Shari'ah* is considered the set of all the objectives

² The Arabic name is "Maqasid Shariah", but usually translated as the objectives of Shariah or the objectives of the Islamic law.

³ *Fiqh* is the Islamic jurisprudence. The *fiqh* scholars expand the *shari'ah* by studying the two sources of rulings, namely the *Qur'an* (the Muslims' Holy Book) and the *Sunnah* (the Prophet Muhammad's practice).

of Islamic law. Dusuki (2009) argues that the scope of *maqasid al-shari'ah* covers all aspects of life related to the social, personal, economic, and intellectual facets.

Maqasid al-shari'ah expresses and translates the final aim of Islam, which is for individuals to enjoy a sheltered society with the highest levels of welfare. Indeed, Dusuki (2009) claims that *maqasid al-shari'ah*'s final aim is to establish justice, eliminate prejudice, and alleviate hardship by promoting cooperation and mutual support. Furthermore, Abu Al-Zahra (1997) considers that *maqasid al-shari'ah* covers the promotion of welfare, the establishment of justice, and the betterment of individuals' behavior.

Fundamental Islamic texts show that Islamic law aims to achieve mercy for believers and mankind through the elimination of harm, establishment of justice, and alleviation of hardship. Mercy is the *shari'ah*-laden goal that must be manifested through all individuals' actions and self-control. For instance, Zakat is one of the five pillars of Islam, which requires "all"⁴ Muslims to annually share a percentage of their wealth to help each other. The collected money of zakat can be utilized in various social projects; for instance: education, healthcare, safe water, hygiene and sanitation.

Would the model look different in Islamic banking and finance compared to conventional approaches?

It is true that the spirit of Islam inspires this model and these measures are derived from its law's objectives. However, it is applicable to both conventional and Islamic finance. As explained in the previous section, Islamic economics seek to promote justice and welfare among individuals. Ethical values are a major component of Islamic economics. The principles of ethics in Islam cover benevolence (Beekun, 1997), equality and unity, honesty, righteousness, fairness, social order (Rafiki, & Abdul Wahab, 2014), equilibrium, freewill, responsibility (Naqvi, 1981), and Justice, truthfulness, and benevolence are the three important tenets of ethics in Islamic economics according to Wilson (2001). Islam preaches ethics from the perspective of accountability towards God. This means that individuals should demonstrate honesty, trust, and fairness in their behavior. However, all these values are universal and not linked solely to Islam.

In his book *The Islamic Vision of Development in the Light of Maqasid Al-Shariah*, Chapra (2008) established the following criteria for each dimension that can be used in the pentagon-shaped performance. The different criteria of the following table show that obviously it can be used for both Islamic and non Islamic (conventional) finance.

⁴ Not all Muslims but those exceeding a certain wealth called "*Nissab*"

Dimension1: enrichment of the human self

- 1.1 Dignity, self-respect and social equality
- 1.2 Justice
- 1.3 Spiritual and moral uplift
- 1.4 Security of life and property
- 1.5 Freedom
- 1.6 Education
- 1.7 Good governance
- 1.8 Need fulfillment
- 1.9 Employment and self-employment
- 1.10 Equitable distribution of income and wealth
- 1.11 Marriage and proper upbringing of children
- 1.12 Family and social solidarity
- 1.13 Mental peace and happiness
- 1.14 Minimization of crime

Dimension 3: enrichment of intellect

- 3.1 Proper upbringing
- 3.2 High quality of education at affordable prices
- 3.3 Library and research facilities
- 3.4 Freedom of thought and expression
- 3.5 Reward for creative work
- 3.6 Finance
- 3.7 Expansion of knowledge and the technological base

Dimension 2: enrichment of faith

- 2.1 Religious worldview
- 2.2 Values
- 2.3 Proper motivation
- 2.4 Education
- 2.5 Justice, freedom, security of life, property and honor, honesty, fulfillment of all socio-economic and political obligations, patience, thriftiness, prudence, tolerance, mutual care and trust.
- 2.6 Removal of poverty, need fulfillment of all, employment and self-employment opportunities
- 2.7 Equitable distribution (human brotherhood).
- 2.8 Family integrity, social solidarity and political stability
- 2.9 Good governance

Dimension 4: protection and safeguarding of Posterity

- 4.1 Marriage and family integrity
- 4.2 Social solidarity
- 4.3 Intellectual and moral development
- 4.4 Need fulfillment
- 4.5 Moral and worldly education
- 4.6 Healthy environment
- 4.7 Freedom from conflict and insecurity

Dimension 5: development of wealth

- 5.1 Education, research, and improvement in technology and management
- 5.2 Security of life, property and honor
- 5.3 Good governance
- 5.4 Freedom of enterprise
- 5.5 Employment and self-employment opportunities
- 5.6 Removal of poverty, need fulfillment and equitable distribution
- 5.7 Social solidarity and mutual trust
- 5.8 Saving and Investment
- 5.9 Optimum rate of development

Conclusion

This chapter began by defining concepts such as social and sustainable finance, and then presented the link between ethics and economics. It subsequently described the reasons for and drivers of ethical reporting and performance measurement. That section showed that there is a connection between traditional financial performance and non-financial performance, concluding that according to a variety of literature, “it pays to be ethical.”

Bedoui and Mansour use the performance measurement pillars of social and sustainable finance as a starting point to illustrate their framework (2014). That framework was opened up and a further step was considered, adding more elements and metrics to assess ethical performance. In reality, adding additional elements helps to develop an enhanced measurement scheme to underpin “impact” investing. Better measurement creates an in-depth system of social and sustainable investment opportunities, ensuring that any firm can not only maximize its own financial performance, but can also ethically promote human welfare, prevent corruption, and enhance social and economic stability in terms of its financial returns. The ethical performance measurement explained in the chapter demonstrates that a firm seeking solely financial returns at the expense of ethical aspects will perform poorly.

Finally, there is a need for a more thorough system to include all the ethical aspects that affect market needs or firms’ activities. Nevertheless, adding more elements to the existing measurement metrics may make them more complex and time-consuming.

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