FIRM SIZE & SUSTAINABLE PERFORMANCE

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Abstract

This paper looks at firm size and its history in terms of policy level requirements for control and facilitation. It further looks at literature in terms of relationship between firm size and performance. It then reviews literature on concepts of sustainability and any relationship with firm design parameter like size.

Keywords: *Size, Performance, Sustainability, Firm, Design*

There are various design parameters for firm which have a bearing on performance. This paper looks at various literature and probes further on possible relationship between firm size and sustainable performance.

Concept of Firm Size

The firm size concept dates back to the history of competition law where governments attempted to regulate competitive markets for goods and services to avoid cartels, monopolies and restrictive trade practices. These efforts were made to restrict the firm size so as to avoid a monopolistic foothold by any trader or cartel of traders to the detriment of consumers' interest (Mehta, 2011). In India, Chanakya's Arthashastra (400 BC) speaks about cartels existing in trade (Kumar, 2012).

The earliest example Lex Julia de Annona enacted by Romans around 50 BC where corn trade was protected through imposition of heavy fine to anyone who directly or deliberately stops supply ships with an intention of increase in price. In 301 AD even death penalty was imposed upon traders who intentionally created scarcity (Garnsey, 1967). Roman emperors brought further regulations through constitutional enactments for which evidences are available for 483 AD (Constitution of Zeno) and Florentine Municipal laws of 1322 and 1325. Wenceslas II of Bohemia formulated various legislations from 1283 to 1305 to prevent cartel within ore traders forcing price increase.

Henry III passed an Act in England in 1266 to regulate bread and ale price by avoiding cartels and large monopolistic enterprise taking advantage of food shortage (Ages, 1985). During the period of Black Death Edward III enacted Statute of Labourers in 1349 to restrict higher wages charged by workmen due to labour shortage in England (Webb & Webb, 1904).

Due to flourish of international trade, many changes were noticed in Europe around 15th century and in 1561 a system of Industrial Monopoly license was introduced which is similar to modern day patents which granted exclusive rights to certain licensed group to produce a particular set of items (Acemoglu et al). This was abused regularly to create shortage and enhance the price of commodities and the courts in England finally made all these grants void as this lead to price increase, quality decrease and made many workers idle. King James I started granting them again from 1623 by excluding patent rights and guilds from prohibition. From King Charles I to King Charles II it continued and used to raise revenue for governance and fighting war through granting rights. In 1684 it was decided in courts to grant exclusive rights to only large and powerful companies to trade overseas (Posner, 1975). However due to increasing coal prices as a result of cartels in Newcastle coal companies which resulted in product cost for many core industries, a new law was passed in 1710 to prevent monopoly restricting size of coal producers. Adam Smith in his famous book "The Wealth of Nations" in 1776 advocated for division of

labour to increase productivity and provide just employment to people which led to the concept of effective small firms.

To avoid these unfair and monopolistic trade practices, many Governments around the world started enacting various competition policies. In France initial foundations of a competition law were laid in the Chapelier Law of 1791. Finland court passed a judgment in 1837 against the cartel of forest producers (Mehta & Evenett, 2006).

Canada was the first country to formulate and adopt a competition law in 1889. The first federal statute prepared by Senator John Sherman to limit cartels and monopolies was passed by Congress in USA in 1890 known as Sherman Antitrust Act. The purpose of this act was to protect the public from the failure of the market. It was revised through adopting The Clayton Antitrust Act in 1914 detailing provisions in terms of discrimination of price, services or facilities (Connor, 1997).

In India, articles 38 and 39 of the Constitution of India gave direction to the principles of State Policy to promote the welfare of people by securing and protecting as effectively as it may, a social order in which justice – social, economic and political to be prevailed so that ownership and control of material resources of the community to be so distributed as best to subserve the common good and that the operation of economic system does not result in the concentration of wealth and means of production to the common detriment (Brass, 1994). The Industrial Policy Resolutions of 1948 and 1956 emphasized growth, social justice and self-reliance and defined parameters of government's regulatory mechanisms. Public sector was taken to be the main driver of production with almost exclusive rights of development and growth in core areas while private sector was allowed limited licensed capacity. Even for other sectors there was no competitive market as there was neither easy entry nor easy exit for enterprises (Chakravarthy, 2006). Government determined the plant sizes, their location and prices in most of the important sectors and further intervened through allocation of scarce financial resources and high tariff walls, restriction of foreign investments and quantitative restrictions.

This licensing policy favoured big business houses in India as they were in a better position to raise capital and had managerial resources to run the industry. They could easily secure licenses based on their past achievements and could foreign collaborations to establish large plants. This led to concentration of economic power in the hands of few business houses and due to entry restrictions, the small and medium industries could not properly develop, survive and thrive in this highly regulated environment. This led to these few highly connected family run business groups getting into monopolistic industries and indulging in restrictive trade practices which were detrimental to the general consumer and economy (Fulda & Till, 1968).

Three studies were conducted to enquire into problems arising out of Government policies in terms of development of industries and economy and welfare of consumer (Majumdar, 2014). Hazari committee set up in 1951 concluded that the licensing system has resulted in disproportionate growth of some of the big business houses in India and submitted report in 1965. Mahalonobis committee set up in 1960 concluded in the report submitted in 1964 that the top 10 percent of the population cornered as much as 40% of the income and further noted that big business houses were emerging because of the planned economy model practiced by Government. The Monopolies Inquiry Commission (MIC) set up in 1964 under the chairmanship of Mr Das Gupta concluded that there was concentration of economic power in the form of product-wise and industry-wise concentration and few industrial houses were controlling a large number of companies and there existed in the country large scare restrictive and monopolistic trade practices. As a follow up the MIC drafted a bill which was enacted by Government in 1969 and The MRTP Act came into existence where the statute was enacted to provide that the operation of the economic system does not result in the concentration of economic power to the common detriment, for the control of monopolies, for the prohibition of monopolistic and restrictive trade practices and for matters connected therewith or incidental thereto. However it proved to be more of a licensing law as core sector monopoly was mostly with Government and entry barrier to industry was bigger due to introduction of this licensing mechanism preventing growth of small and medium scale (Panagaraiya, 2005)

In 1991 India adopted reforms in terms of deregulation and liberalisation. In post 1991 LPG paradigm, a number of changes were introduced in policies related to licensing, foreign investment, technology imports, government monopolies and ownership price and purchase preference for the public sector, reservation for the small scale sector etc to make market driven by competitive forces so that there can be incentives for raising productivity, improving efficiency and reducing costs. The concept of firm size was no more treated with intolerance, so as for monopoly as market was made open to allow competition. This resulted in de-controlling, de-regulating, delicensing, de-canalising, and de-beaurocratising of industry and trade which resulted in various amendments of MRTP Act and after the wave of globalisation initiated by WTO in 1995 Raghavan committee reexamined MRTP Act in 1999 and proposed a new law. India therefore adopted Competition Act in parliament in 2002, and further adopted Competition Amendment Act in 2007 (Ramappa, 2009). National Development Council subsequently recommended National Competition Policy in 2007. Government of India has set up another committee on Competition Policy in 2011 (Dwivedi, 2017).

The above literature indicates to some extent that economies around the world have been making policies from early days to determine and regulate firm size. As my study is to understand the possible relationship of firm size with sustainable performance, I went further to understand how different countries define firm size for policy level intervention.

Firm Size Definition across the World

Different countries adopt different measures to determine size of a firm. Most countries use the number of employees as the indicator of firm size while some add net asset, some add annual turnover and some even take the level of capital investment in plant and machinery as the determinant of firm size. In India it was earlier capital investment based size definition, which has been updated recently by adding turnover while increasing the capital investment for Micro, Small, Medium and Large enterprises in both manufacturing and service sector.

The above shows a varying degree of definition on firm size and that brings out a question about "what determines firm size?" Here the definition of firm size does not follow any pattern of developed or emerging or underdeveloped economy and appear to be unrelated on this factor. The literatures and policy documents available from Planning Commission and Ministry of MSME does not give any clear reason on deciding to classify enterprise purely based on capital investment and recent addition of annual turnover.

However, from all the firm size determinants above, the employment emerges as the prime factor, and we will subsequently observe that, scholars also have been taking this into account for their studies where size is one of the variable.

Firm Size and Performance

Performance of a firm has always been a matter of interest for researchers and for centuries social scientists have been trying to estimate optimal parameters for firms to improve their performance. Several attempts have been made to study performance of firms based on strategy and size of the firm (Smith et al, 1989; Liu, 1995; Beaver, 2007; Glaister et al, 2007; Escriba-Esteve et al, 2008). However in most of the literature we find that not much attempt has been made to link sustainable performance with size. Researchers have focused more on technical efficiency, profit, total factor productivity, labour productivity etc. In the present scenario of depleting natural resources, it is important for firms to survive and thrive in the long run through contribution to shareholders, environment and stakeholders.

Some researchers have undertaken study to find effect of firm size on **rate of growth (Sales)** of firm. There has been mixed findings on this issue. There is no relationship between size of a firm and its rate of growth (Simon, 1964). Large firms were found to have a better growth rate than small and medium firms in a study conducted in Australia (Parker, 2000). Successful smaller firms exhibited lower productivity growth rates and subsequently lost their advantage during transition of Slovenia from closed

economy to being part of European Union (Polanec, 2004). Firm Size was found to have a moderating effect on firm performance which is positively associated with formal strategic planning in a study where 500 large firms were studied in Turkey (Glaister et al, 2007). In a study conducted in manufacturing firms in eight European countries, it was found that Large firms perform better than SME due to their approach in product & process innovation (Vaona and Pianta, 2008). Small firms with strategic orientation of top management team perform better sales growth and market share (Escriba-Esteve et al, 2008). Sales growth rate is negatively associated with firm size (Akcigit, 2009).

Another line of study has been to measure performance in terms of **technical efficiency** and productivity having some relationship with firm size. Bigger firms with more hierarchical level tend to be less efficient (Simon, 1964). Out of four Indian manufacturing industries studied, firm size is positively associated with high factor productivity in only one industry: machine tool manufacture. Other variables that contribute to difference in efficiency include (a) age of enterprise (b) vintage of capital stock (c) level of labour force experience (John, 1984). In industry wise study, higher total factor productivity (TFP) growth was observed for industries with larger firms having greater market share while lower TFP growth was observed for industries with smaller firm having greater market share (Acs et al, 1996). Small and medium firms tend to be less inefficient than the larger firms (Diaz and Sanchez, 2002). Larger firms are technically more efficient and productive in China (Cheng and Lo, 2004). Labour productivity and Total Factor productivity found positively associated with size of the firm in a study conducted in African firms (Biesebroeck, 2005). Productivity increases with size till a certain level then decreases due to diseconomy of scale (Halkos and Tzeremes, 2007). The innovation and productivity found positively associated with firm size in a study conducted in Spain (Castany et al, 2007). Positive relationship between firm size and labour productivity and Total Factor Productivity found in a study in Canada (Leung et al, 2008). Firms in the mid-level size categories appear to be less efficient than small and large size firms (Truett and Truett, 2009). Large and older firms found less productive in a study conducted in large Australian firms (Palangkaraya et al, 2009). Firm size has a positive and significant impact on the use of innovation and learning measures which has impact on performance (Jusoh, 2010). Regulations were found to have major effect on firm size and productivity in a study conducted in France (Garicano et al, 2011). Big firms are more productive, offer higher wages and pay more taxes than small ones. Economies dominated by small firms are often sluggish (The Economist, 2012, May 3).

Some similar studies have been conducted taking **profit** of the firm as measure of performance. Firm size has no effect on profit in manufacturing industries in USA (Amato and Wilder, 1985). Large and Extra Large enterprise make more profit if they are more market oriented (Liu, 1995). No significant growth in firm performance was observed on size as it was dependent on other factors (Orser et al, 2000). Size does not matter for performance while innovation is the key driver for profit (Skypala, 2005). Small and Large firms generate more profit than medium sized firms in financial services (Amato and Burson, 2007). Small firms with strategic orientation only survive in the long run (Beaver, 2007). In a study conducted on US apparel intermediary firms in small and medium size, it was found that Firm size has no effect on profit (Ha-Brookshire, 2009). Size and Financial performance are not consistently related and performance is dependent in financing (debt or equity) of size expansion (Muzir, 2011).

A very few studies also have been conducted checking sustainability efforts. Size is positively associated with environmental performance (Elsayad, 2006). Firm size has no effect on Corporate Social Responsibility activities (Blomback and Wigren, 2009). Organisation size, ownership and industry are strongly related with support mechanisms and reporting of sustainability (Gallo and Christensen, 2011).

In the studies on effect of firm size on sustainability efforts, the expenses incurred have been considered on CSR etc., except the article (Nayak, 2015) where the phenomena has been explained qualitatively.

In 16 of the above studies employment is taken as a measure firm size. Turnover is used for size determination in 3 of the studies. Capital investment and net asset is used for the purpose in one study each and a mix of these is used in 2 studies. The exact determinant of firm size is not specifically mentioned in 11 of the studies mentioned above.

In all above sets of studies, findings were found to be inconsistent with each other. As no detailed study in terms of firm size with respect to sustainable performance could not be found in literature accessed, this was the area selected for further investigation..

There is a finding that medium sized firms are more market oriented than small firms (Laforet, 2009). Large and Extra Large enterprise make more profit if they are more market oriented (Liu, 1995). Some studies also have mentioned effect of strategic planning on performance (Beaver, 2007; Glaister et al, 2007; Escriba-Esteve et al, 2008). Other studies say innovation and other strategic factors influence performance alongwith size (Orser et al, 2000; Skypala, 2005 ;Castany et al, 2007 ; Vaona and Pianta, 2008 ; Jusoh, 2010).

For collective organisations, there are not many studies related to size and performance. Large cooperatives are more efficient while smaller ones are more profitable in terms of performance (Lerman & Parliament, 1991). Study on North Dakota agricultural cooperatives finds no relationship between business size and profitability (McKee, 2007). Another empirical study indicates that, firm size has a positive relationship with cooperative performance (Arcas et al, 2011). Another quantitative research conducted at Nairobi concluded that there is low but positive relationship between collective organisation size and financial performance (Kathuri, 2014). A study in 2017 in credit cooperative societies in Kenya showed positive relationship between firm size and financial performance (Karuga, 2017)

This brings us to an assumption that firm size and performance are having some relationship. To explore it more, literature available for sustainable performance and sustainability were reviewed. For the purpose of this study, sustainable performance of the firm is taken as their actions which would lead to long term, intergenerational survival and success.

Firm Size and Sustainability

The history of Sustainability dates back to early human civilization where a community or region developing by using available natural resources and then during some crisis arising due to external threat, try to resolve the issue to survive and sustain or perish under its pressure. The industrial revolution prompted use of the fossil fuel deposits which are non-renewable and in the race for rapid growth people generally ignored the fact that with rampant use the deposits, the supply might end in decades. This also has adversely affected the environment (Caradonna, 2014).

Sustainability is about building a society where firms address the triple bottom line instead of profitability as the only measure of performance (Schaltegger, & Wagner, 2017). Firms moving towards creating a balance between economy, society and environment would be seen as approaching sustainable performance which will make them maintain and expand economically, increasing shareholder value, enhancing corporate image, creating customer delight, improving quality of products and services, following ethical practices, improving the quality of human resources, creating value for all stakeholders and also taking care of people who might lose out their land and resources in the process of establishment and operation of the firm (Brundtland, 1987). To achieve this, mere allocation of certain percentage of economic profit as CSR fund may not be enough until these are linked to the business strategy of the firm and not being driven by the vision and mission of the firm (Bassell et al).

Firms may also gain out of sustainability initiatives as these activities shall reduce risks, waste, increase material and energy efficiency, innovate and develop environment friendly products this makes the operation profitable and makes the firm stand out in the long run. Integration economic, social and environmental objectives into firms' business strategy and striking a balance between these three might help them gain in the long run (Szekely and Knirsch, 2005).

Sustainability spreads across a larger space with many stakeholders spread over a very long period of time. It refers to a natural open system which is diverse and heterogeneous in character. The objective functions in this are balancing and optimizing multiple objectives of the ecosystem and manage with self-control while helping to strengthen the weaker stakeholders through an attitude of giving, loving and sacrificing (Nayak, 2011). Love, sacrifice and co-operation are going to help achieve sustainability (Meadows et al, 1992).

Global changes in terms of development of industrial establishments there by rivaling nature in many facets, Land conversion from traditional use to industrial use, Population growth, biodiversity loss, agricultural intensification in terms of rampant use of pesticides and insecticides induce climate change and ozone depletion which affects the weakest of the society the most (Daily and Ehrlich, 1996).

Research has established that several common pollutants increase at a society having lower levels of per capita income and decrease at high levels (McConnell, 1997). Therefore approaching sustainable performance might possibly create a better environment and improve the lifestyle of even the weakest stakeholder.

Sustainable development normally is referred human wellbeing to be the object to be sustained. Some look at the current generation's wellbeing where sustainable development leads to the wellbeing of future generation which is at least as high as the wellbeing of the current generation. Others classify it as intergenerational wellbeing where they define social welfare as not the only wellbeing of the current generation but also include the potential wellbeing of the generations to follow (Pezzey, 1992). It is important to consider natural capital, human capital, reproducible capital and environmental capital to work out a broad spectrum to determine the movement for sustainable development (Arrow et al, 2004).

Sustainability Movement and Firm Size

Bigger firms might require more resources to operate and might be competing to have control over scarce resources (Crane & Matten, 2016). While resources are limited, the competition to have control might be forcing firms to act unsustainably. This might also hold good for primary sector of production, in agriculture, as farmers competing for better crop would use more chemical fertilizers and pesticides which might affect the society and the environment. If we look at the history of sustainability, the movement for sustainable development started in 1962 by Researcher Rachel Carson who brought together research on toxicology, ecology and epidemiology in the book "Silent Spring" to suggest that agricultural pesticides are building to catastrophic levels, linked to damage to animal species and human health (Khondker, 2015). This was followed by various conferences on Biosphere, Paul Ehrlich's publication "The Population Bomb", formulation of National Environmental Policy Act by USA, continuing deliberations and debates by WTO, UNEP, Global Reporting Initiatives and Climate Negotiations.

From various deliberations above with scientists all over the world working to reach some level of consensus to avoid problems for the future generations, the concepts of deep ecology and degrowth emerged. In these concepts the prime focus is to reduce consumption and limit the growth of firms so that there is balance between economy, society and environment.

Deep Ecology

The concept of deep ecology is drawn from literature below. It advocates for reduction of consumption, which might have links to firm size. Bigger firms might consume more to gain competitive advantage.

We have been using, abusing and exploiting resources provided to us by mother earth from the earliest days of civilization. Human race has been doing this with a pride of being the master of this world and all the resources available are being used without considering the need of millions of other species existing on earth (Lovelock, 1995).

Every entity on earth has some value irrespective of its use to population and happiness in life is dependent on richness and bio-diversity of the environment. For the sake of development, we have no right to adversely affect this richness and have to use the available resources in a responsible manner (http://www.gn.apc.org/resurgence/185/harding185.htm[α]). Unfortunately the human impact on bio-diversity has been damaging due to the competition for staying ahead of others, depletion of resources due to exponentially growing population and changing lifestyle. This is possible only if changes in political

willpower, economical objectives, suitable technology and human ideology are made peacefully and democratically (Harding, 1997).

All the communities, organizations, states and nations should respect the above and every action should keep the above in mind which will ultimately lead to sustainability. If we think of the above concept, we must also think of possible ways to measure actions of firms, communities and nations moving in the direction of deep ecology (http://trumpeter.athabascau.ca[α]).

[α] Accessed in 2016

The underlying indication of measurement from this concept is about consumption of resources such as power, water, fuel, minerals etc and estimation of wastage and recycling. The other measure might be about internal and external co-operation for development of employees, community and society.

The other related concept on sustainability has emerged as degrowth.

Degrowth

This concept is also linked to the topic of this study as degrowth advocates restricting growth thereby limiting size. The concept of degrowth is also aligned with the above deep ecology principles. It puts forward the concept that "a global economic growth is not sustainable and unfeasible from an ecological point of view. It states that the goods and services produced by economic activities of firms are not the only wealth available for creation. Fair justice, healthy ecosystem, reduction of inequality, good human relations within a society and democratic institutions are other and very important forms of wealth. Nations should formulate policies and firms should work towards creation of this important wealth as well (Zehner, 2012). As resources available for economic activities are limited and finite, overconsumption and wastage might lead to scarcity for future generation. This might degrade the quality of life, biodiversity, natural resources and shall lead to growth in local violence for sharing common resources (Levallois, 2010).

The rapid growth and adverse impact thereof was explained through results of a complex computer simulation program World3 jointly by a team of scientists from USA, Europe and Japan which looked at population, industrialization, pollution, food production and resource depletion in different scenario and in their book "Limits to Growth" (Meadows et al, 1972) have cautioned the world about running out of resources if the current trend of over production and over consumption is not checked. Updates on this have been published in 2002, 2007 and 2012 where their past predictions are related to current facts.

Responsibility of Firms in the direction of degrowth might be to stay small by focusing on right size of profit, right size of production capacities, employment level, market share and customer size. Excess profit is something that would endanger ecological sustainability and social wellbeing of the firms' environment (Jamali et al, 2010).

Degrowth has also been referred to as Green Growth (Victor, 2010). The concept of degrowth or green growth is an economic state in which the rate of reduction of environmental impact per unit GDP exceeds the rate of increase of GDP. Brown Growth and Black Growth have also been defined in this line of thought. Even till now developed countries like USA have not shown any better than Brown Growth (Victor, 2010).

Degrowth is the intentional redirection of economies away from the perpetual pursuit of growth. This includes a planned and controlled contraction to get back in line with carrying capacity, with eventual creation of a steady state economic system that is in balance with Earth's limits (Nørgård, & Xue, 2016). The race for development has caused obesity, increasing loan burdens, work stress, health problems, traffic congestion and social isolation. Therefore it is important to reduce overconsumption by individual, community, society, nations and firms. Co-operation, love and sacrifice are the key for reduction of overconsumption and every community or nation should set and example of acting on these themselves while advising others to work accordingly (Assadourian, 2012).

It has been proposed to do away with GDP & GNP as the measure of economic growth. The GDP Paradox may create problem is actual measurement of economic wellbeing (Bergh, 2009). Degrowth might the solution for nations and firms to be sustainable (Kallis, 2010).

The driving factor for degrowth is co-operation among firms not competition. Co-operation does not mean forming a cartel for exploiting the consumers and affecting the society and environment. This co-operation is essentially to work together by limiting growth benefitting all stakeholders including society and environment (Meadows et al, 1972). Co-operation may be achieved if firm or community or region makes effort to stay within manageable limit. This might lead to conservation of natural resources and shall have positive effect of society and wellbeing of people.

Gross National Happiness would be a better indicator of social wellbeing and development of all stakeholders instead of GNP or GDP (Seeland, 2008) and shall create friendly atmosphere within people from diverse culture and background (Seeland, 2009).

Firms in a bid to grow big and grab more market share resort to unethical practices in advertising which leads to consumption of useless articles. GNH index for every promotional campaign run by firms to regulate the same shall be useful so that overconsumption might go down (Hellemont, 2009).

Militarism and conflict between countries also has given rise to arms race and over production of defence goods which is disastrous for society (Szell, 2007). Countries also should limit its boundaries to reduce conflicts and small countries which are self-dependent shall never engage in conflicts (Galtung, 1970).

Self-reliance and maintenance of equality within community through a long span of time would lead to more co-operation, harmony and wellbeing of the society (Gamson & Palgi, 1982). We owe this environment to our successors and we must make an effort to decide about the type of world we want to spend our life now and what we keep in store for the future generation (Robinson, 2004).

All these concepts lead to the dimension of possible reduction of consumption and increase in co-operation. This also reinforces the latent performance measurement concept within deep ecology.

They further indicate that sustainable development for nations and sustainable performance for firms are going to be the focus of the future. It is just a matter of time before the actors might realize the need. Cooperation possibly would be the key to sustainability, and size might have some relevance for cooperation, which can be understood from the Prisoners' Dilemma game theory where chance of co-operation is more if the community or group is small where probability of collective working is more and co-operation would also enhance reputation of the group (Nowak and Highfield, 2011). From these literatures we assume that there is a possible relationship between firm size and sustainable performance. Now the question comes to mind about the ways firms indicate about their performance for sustainability. How can we say about a firm is making progress towards sustainability? What can be the measures of sustainable performance? There are several attempts to find out possible factors for measurement of sustainable performance.

Indicators of Sustainable Performance

Indicators are important in terms of this research, because, to find out possible relationship between firm size and sustainable performance, we should be able to estimate a firm's performance in terms of sustainability, and without appropriate indicators, it would not be possible to do so. Many scholars, activists and organizations have been working to converge into a common list of factors which can be measured for sustainable performance of firms.

World Resources Institute proposed measurement of environmental performance in the context of sustainable performance on four aggregate indicators namely pollution, resource depletion, ecosystem risk and environmental impact on human welfare (Hammond, 1995).

Measurement of sustainable development may be based on indicators which signal the pressure that society puts on the environment (in the form of pollution and resource depletion), the resulting state of the environment (especially the incurred changes) compared to desirable (sustainable) states; and the response by human activity, mainly in the form of political and societal decisions, measures and policies (Hardy and Pinter, 1995).

For sustainable performance of firms, it might important to develop sustainability of nature (earth, biodiversity, ecosystems) through development of people (child survival, life expectancy, education, equity), sustainability of life support (ecosystem services, resources, environment) through development of economy (wealth, productive sectors, consumption), and sustainability of community (cultures, groups, places) through development of society (institutions, social capital, states, regions) (Parris and Kates, 2003). Wellbeing Index (developed by The World Conservation Union) and Environmental Sustainability Index (developed by The World Economic Forum) are also used for measurement of sustainability for countries and regions. The Diversity Index developed by REGLAB can also be used as an indicator to assess the efforts of an organization towards sustainable performance.

The Sustainability Assessment Model for firms developed by BP uses 22 performance indicators under four broad categories of environmental impact, economic impact, resource impact and social impact (Baxter et al, 2004).

Sustainable performance of firms can also be measured through indicators beyond triple bottom line by measuring ethics, values and principles, accountability and transparency, commitment to triple bottom line, focus on environmental processes, socio-economic development, human rights and workplace conditions and engaging business partners (Hubbard, 2006).

Cost based approach by estimating monetary impact of business operations and offsetting the same from revenue generation can be one approach of measurement (Nourry, 2007) of sustainable development. Full cost accounting approach proposed through measurement of Green Value Added by a firm by subtracting cost of estimated environmental damage from the Economic Value Added to measure corporate sustainable performance (Proops et al, 1999).

Another approach for measurement of firm sustainable performance is through sustainability linkage and factors of socio-environmental, socio-economic and environmental-economic (eco-efficiency) issues (Ranganathan, 1998).

Sustainability within a firm may be influenced by both internal and external factors. We take the approach suggested by Szekely and Knirsch in 2005 as given below as we find this to be inclusive of all above approach where both internal and external factors and their sub-components are well discussed. The factors that determine sustainability within a company (Szekely and Knirsch, 2005) are Internal: managerial factors, operational factors, and economic factors and external: market factors, government factors and stakeholders' expectations.

Many firms while reporting sustainable performance more or less follow the above points to determine the performance indicators.

But the next question comes to mind that, can we take a firm reporting for sustainability through GRI or Dow Jones as performing sustainably? Does reporting cover all the firms? Do small and medium firms report? If they don't report, are none of them going for sustainable performance? If we accept this, then how a number small and medium firms worldwide have survived for long and are quite successful (Burlingham, 2005; Collins, 2001; Collins & Porras, 2011). To understand this, we would further look at various literatures on strategy for sustainability, where we might get some additional insight for sustainable performance.

Strategy for sustainability and firm size

Strategy of a firm and strategic intent of the management vary irrespective of firm size, firm type, industry they operate in, technology and management style they adopt. From my experience with different industries, I wondered how some firms survive for long and succeed, and what strategy they adopt for the

same. Do small firms have different strategy than large ones in this aspect? Therefore going through literature on strategy for sustainability helped getting insight on proceeding further in this study.

The only hope for sustainability is to change forms of consumption. To do so, we must innovate (WBCSD, 2002). This emphasizes the need for changing the consumption and production and innovate ways to bring these down without compromising the wellbeing of the future generation. Firms pursuing sustainability strategy would influence and improve sustainable consumption behavior (Mariadoss et al, 2011).

A firm performing sustainably may be the one where there are profits for the shareholders and in addition has implemented business practices which constantly improve the relationship of the firm with the natural world and human society (Tueth, 2010).

The concept of sustainable development for an enterprise might focuse on (a) taking care of human factors such as employees and customers (b) Reduction of adverse impact on nature through changes in business processes (c) Respecting human value, love and cooperation (d) take a holistic systemic view and understanding the interdependence and interconnectedness and acting in such a way which would not disturb the balance (e) create products and services those are durable and long lasting so that overproduction and overconsumption is avoided (Barbian, 2012).

To strategize sustainability, the top management might have to play key role as driver of the initiative with supportive infrastructure and policies. External and institutional efforts may only bring firms to a reporting arena where they can present their actions in numbers and figures irrespective of their real intent to move in this direction. Therefore sustainable performance might be an internal factor of the organization which is embedded into the firm strategy driven by top management (Law &Gunasekaran, 2012). Sustainability strategy may include exploration and exploitation of knowledge management practices to bring in change in product, process and market (Schrettle, 2011). Strategy may have to be dynamic to bring in sustainability as the firm may have to be open minded to welcome the change in technology and infuse better relationship within all stakeholders which might take care of the triple bottom line and one single policy may never hold good to keep the firm running forever (Hidding, 2001).

Firms might feel that investment in social and environmental factor is a trade-off for the shareholders and the financial performance might be compromised. However there are empirical evidences that firms are able to implement environmental, social and governance strategy without incurring any significant financial cost (Humphrey et al, 2012). Therefore, the firm may be going to gain in the long run as green practices will bring down the process cost and wastages. Empirical evidences also show that green supply chain management might improve firm performance (Lin &Sheu, 2012). Visual disclosure of green practices to tempt consumers and stakeholders in believing the firm's sustainability intent may rather be a marketing tool where firms might try to legitimize their action through photographs and other means. Firms who strategize sustainability in responsible manner would rather present quantitative data for reflecting their real and just motive (Hrasky, 2012). Firms might need to develop strategic capabilities and resources to improve social and human welfare, reduce ecological impact and effectively achieve organizational goals (Murthy, 2012) and society may be required to be the key component in business strategy of a firm (Hall, 2007). Strategy for building sustainability might prevent firms from conflicts with authorities and stakeholders and this in turn enhances image of the firm which brings in benefit to the firm in the long run (Pratoom & Cheangphaisarn, 2011).

Strategy for building sustainability may have to be a long term action plan where reverse substitution of human labour in place of scarce fossil fuel and other materials extracted from environment are to be initiated which would add value to both society and environment while taking care of the shareholders (Ayres, 1996). The key to being successful and sustainable may to incorporate sustainability concepts into all levels of the firm's business goals (Challener, 2013).

Many firms report their achievement for compliance purpose. But a transparent reporting may provide insight into a firm's strategic focus and develop trust of authorities and stakeholders (Magarey, 2012). A strong corporate culture blended with high degree of social responsibility and environmental concern may infuse right value to the employees at all levels (Napal, 2013).

There might be social dilemmas or conflicts between short term self-interest and long term collective interests. Firms, for short term gain many times may ignore the long term potential benefits and therefore engage in competitive practices in exploiting resources. Collective interest might need cooperation, love and sacrifice which would bring wellbeing in the long run (Dijk et al, 2013). This idea has been worked upon through millions of iterations in a game theory set up which leads to the inference that only cooperation can bring welfare to all stakeholders in the long run (Nowak, 2011).

There might be a belief that one cannot follow both economic and ethical considerations simultaneously in strategy as there might exist a trade-off. But above literature advance the idea that both can co-exist if integral approach to strategic model is taken. This might have to be built upon strong value system which needs to be built into the organization culture which develops employees to enjoy their work and derive satisfaction which forms a higher level of benefit over the monetary compensation (Crane & Matten, 2016) These employees with individual values would collectively work to get sustainable competitiveness, which would showcase strong value system, and raise the standards within the industry. This might lead to the next level of external strategy driven by both social and environmental sustainability factor which brings in systemic change (Landrum et al, 2013).

Mathematical biologist Martin Nowak has worked for over 40 years to reach a conclusion that only cooperation can bring in long term survival, contrary to the popular belief of competing and destroying the rival. This, he says, may be more applicable in communities where reciprocity would result in cooperation which would lead to wellbeing of everyone. It might important to look for the strategic intent of the organization. If it aims at improving the triple bottom line, the firm might be striving to make positive impact for all stakeholders. This might be possible through better interconnectedness and interdependence within all actors of the firm, cooperation, love, trust and concern for others' wellbeing. This might be possible with proper relationship management (Arnold, 2017). If we look at transaction cost economics (Williamson, 1981), the cost gets reduced if the frequency of transaction is more. In similar lines, the more the interconnection and interdependence within actors, the better might be the trust and cooperation through frequent interaction.

As explained in some literature, sustainability may be termed as a dynamic state of deep relationship and love among all the actors and actants in a micro ecosystem; arising out of deep sense among the actors on the reality of inter-connectedness and of the need for interdependence among the various constituents in the ecosystem (Nayak, 2013, 2014) & (RTD, 2016). The literature might be converging to the idea that the foundation for people participation seem to rest on "Trust" and creation of "Social Capital" (RTD, 2016). In addition, transparency in all transactions and deep concern for others might strengthen bonding within stakeholders which would drive the performance of the firm to sustainability.

From the above literature review, it can be conjectured that there is a relationship between firm size and sustainable performance.

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