



MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Metrics about Organizations and Economic Activity

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Economic activity and/or the performance of an organization

It is economic activity that turns natural wealth into the goods and services people need to have a decent quality of life. This core purpose is at the center of MDIA analysis.

An economic activity is relatively simple, located in one place, easy to describe in every interesting aspect of its operations. The implementation of an economic activity may be done by a variety of economic actors.

An organization is built on top of one or many economic activities. In conventional accounting there are detail rules about how a consolidation of different entities into one should be done. MDIA follows the same basic methodology.

Metrics of organizational performance

Conventional money profit accounting

Conventional money profit is very simple and very powerful. It is designed so to account for all money based transactions and report according to rigorous rules about the financial state of the organization (the balance sheet) and the profit performance of the organization (the profit and loss account). The double entry basis of conventional accounting was conceived more than 400 years ago, but still remains a core component of well designed business accounting systems.

Management accounting and cost accounting

Conventional financial accounting is complemented by internal management accounting and cost accounting. In a well designed system these make efficient use of money transaction data to report back on critical parts of the business operation. In a well designed system, there is a lot of information without an excessive amount of data. One of the tools that is used to accomplish this in cost accounting is the 'standard cost'. In management accounting, it is common for a budget to be used as a benchmark of performance.

Triple Bottom Line reporting

With the 'Triple Bottom Line' (TBL), there are three main components to the analysis:

1. the money profit dimension;
2. the impact on people dimension; and,
3. the impact on planet dimension.

Components of MDIA analysis

MDIA goes beyond the TBL components. The components of analysis in MDIA are as follows:

1. People – Money, Material Wealth and Quality of Life;

2. Profit - Economic activities and Organizations;
3. Product - Supply chain - Use - Post Use Waste Chain;
4. Planet - Resource Depletion - Materials - Energy;
5. Planet - Environmental Degradation - Land - Water - Air;
6. Built Environment - Infrastructure, Buildings, Plant and Equipment;
7. Enabling Environment - Governance, Rule of Law, Taxation, Organizations;
8. Knowledge - What we know; and
9. Place – Where everything happens.

The reporting by organizations is a measurement of an organization's performance, which in turn is a result of decisions made inside the organization and by investors (whether or not they want to invest) and customers (whether or not they want to buy the products) outside the organization.

The MDIA initiative uses these two concepts:

1. there is a system of quantifying value using the concept of 'standard values' similar to 'standard costs' in cost accounting;
2. there is a focus on the economic activity and the discrete components of the various activities rather than overview averages for an organization.

A simple organization may be made up of one economic activity. Where an organization is complex, its performance is the aggregation of all the economic activities of the organization. This is similar to consolidation in conventional money profit accounting.

Perspectives

MDIA looks at state, progress and performance from several perspectives:

1. An individual (people);
2. A community (place);
3. An organization (profit); and
4. Product (the key link between places, people and organizations).

Consolidating economic activities

Essentially, the performance of an organization is the aggregation or consolidation of all the economic activities that make up the operations of the organization. There are rules for consolidation in the accounting profession that are widely understood.

Economic activities may be consolidated not only into a single organization, but in other ways as well. Thus:

1. having aggregation of economic activity consolidating to place;
2. integrating product value chain into the system from initial stages of the supply chain to the final stage of the waste chain

Money profit and return on investment (ROI)

Money profit is calculated using the 'profit and loss account' which essentially presents all the revenues of the organization, and then an analysis of the expenses of the organization. The difference between the two is either a profit or a loss.

In the double entry construct, the difference between the balance sheet at the beginning of the period, and the balance sheet at the end of the period is another way to compute profit or loss.

Return on investment (ROI) is the amount of profit associated with an investment, expressed as a percentage. It is a helpful ratio but should be well understood in order to be of utility. ROI does not differentiate between operations that are inherently high performance and those that have been gamed using financial leverage or some other form of financial engineering.

The idea of return on assets employed gives a better measure of performance. Return on assets employed gives a clean measure of the relationship between the resources being used and the results arising from their use.

Money flows and wealth

Money flows and wealth are not accounted for effectively in conventional money profit accounting, but they have an important impact on the way society and the global economy functions.

Money flows explain why some otherwise successful economic development does not result in expected wealth increase. This is the underlying issue in some countries which are said to suffer from 'a resource curse'

Profit - Reward for Investment and Entrepreneurial Risk

Money profit accounting is the same at the economic activity level as it is for a total organizations. It may be likened to departmental accounting in a bigger organization. The basic concept in money profit accounting is that revenues less costs equals profit.

Revenues

The revenues are a function of price, which in turn depends on the level of enjoyment by the customer and the perceived value of the experience, and hence how much the customer is willing to pay.

Costs

Costs are a function of the product and productivity. There are many types of cost including, the wage and salary payroll, the payroll benefits, raw materials, other purchased materials, use of equipment, and marketing and distribution costs.

Productivity

Productivity is good for profits because it enables more production and therefore revenues for less labor. A similar improvement in profit is also possible by moving production from a location with high wage rates one with low wage rates. The result of reduced salary costs is not only improved profit but also a bad impact on people (see below),

People – Wellbeing and Quality of Life

People as a business cost

People are a business cost. The cost appears in several ways:

- There is the main employee payroll and benefits;
- There is the executive payroll and other remuneration; and
- There is the reward for the owner / investors

In conventional money profit accounting, and reduction in the main employee payroll and benefits will reduce costs and increase profits. This is the business behavior that is encouraged by conventional money profit accounting.

People costs as a social benefit

When an individual is employed and gets pay and benefits, then there is a huge direct benefit to the individual. Better, this benefit flows into the individual's family, to his/her friends and beyond.

Money flowing into a family also means that money flows into the community. The local multiplier is a result of this money being used to buy things the family needs, and in turn this becomes revenue to a business, and in turn this means that the business must buy things, and so on.

The local multiplier is quite variable depending on the level of economic localization that exists in the community. As a starting point it is likely that the local multiplier with average around 2.5.

Product as output

A product is the output of an economic activity, and it is the product that is the link between and economic activity and the world beyond the economic activity. The performance of the economic activity is carried forward in the product.

Shell, the integrated oil company behaves in a very anti-social manner in many of the places it operates. The value destruction associated with this behavior is embedded in the product it sells to consumers.

Product as input

Products are inputs to many economic activities. The performance of the product is a function of all the economic activities within the supply chain. This is carried forward in the product.

Puma studied the impact of its operations for 2010, preparing an 'environmental profit and loss account'. This alerted them to the fact that around 90% of the environmental impact of their products was associated with their raw materials they purchased.

There was a time when electricity was considered a 'clean' source of energy, but the environmental impact of electricity happens not when electricity is used, but when electricity is produced.

There is huge difference in the environmental impact of a coal fired electricity generating plant and the impact of generating electricity with renewables like wind or solar.

Planet – Resource Depletion

There are a range of impacts on the planet that are related to resource consumption and the depletion of a finite, albeit large, stock.

Depletion of mineral resources

Use of most products involves the consumption of mineral resources, and the depletion of the resources of the total planet.

Depletion of fossil fuels

Use of energy usually involves the consumption of fossil fuels, and the depletion of fossil fuel inventory for the total planet.

Degradation of land

Land is limited, and best use should take into account not only the opportunity to make profit, but also the impact of depletion or degradation of the land, and the environment associated with the land including bio-diversity.

Use of water

Water is limited, but for most of the period of the agricultural and industrial revolutions water has been used as if it was an infinite resource. There is a vast amount of hidden water in the 'stuff' we buy. Water is the most important compound in everything, but it is treated in business metrics as unlimited in availability and of little or no cost.

Destruction of bio-diversity

This is a silent problem, but growing dramatically. The survival of life depends on bio-diversity which is now declining at a rate that is many times bigger than anything ever experienced in history.

Planet – Environmental Degradation

Solid wastes

There are a range of impacts on the planet that are related to the waste that results from almost every form of economic activity. There are multiple waste flows in three classes:

- Household waste is generally classified as municipal waste,
- Industrial waste as hazardous waste, and
- Biomedical waste or hospital waste as infectious waste.

The detritus from a consumer society is huge, and it grows with the material prosperity. The cost of solid waste is increasing as it becomes more and more difficult to push the problem into someone else's space.

It is not many years ago that New York City's municipal waste (including hospital waste) was simply put on barges, towed out to sea, and dumped into the ocean. Now it is trucked more than a hundred miles into remote land fills.

Water pollution

Massive water pollution has been the norm for industrial activity for most of the industrial revolution. Rivers have been a convenient way to get rid of liquid and semi-solid effluent from cities and from industrial facilities. Developed countries have only addressed this problem post WWII, and many developing countries have not yet started to address the issues.

Water pollution from agricultural run-off is also a big problem. The toxic mix of fertilizers, herbicides and pesticides gets into the rivers, and eventually into the oceans.

It is reported that a large part of the Caribbean is now 'dead' because of toxins coming into the Gulf of Mexico from the Mississippi River.

Atmospheric pollution ... particulates

Particulate pollution. At the height of the industrial revolution in Europe, particulate pollution was a serious and dangerous problem. The 'smog' of 1956 in the UK was a countrywide blanket of fog together with industrial particulates that ended up killing hundreds.

Atmospheric pollution ... Sulphur

Acid rain is produced by SO₂.

Atmospheric pollution ... Nitrous Oxides

Nitrous oxides. Urban centers where building boilers are burning diesel for heating and automobiles are burning gas for transport produce massive amounts of nitrous oxides unless the offending compounds are removed from the fuels. This has been mandated in some places, but not everywhere.

Atmospheric pollution ... Greenhouse Gases

Greenhouse gases are primarily carbon dioxide (CO₂) and methane (CH₄). These are invisible and for climate change deniers might as well not exist. But science has shown that these gases are resulting in atmospheric changes that we cannot fully understand and predict. Reduction is a start, but the eventually elimination of the release of these gases into the atmosphere is probably the best goal.

Built Environment

The built environment has a huge impact on the performance of society and the economy. A big part of quality of life is determined by the performance of the built environment. The built environment explains why some societies have better performance than others.

Elements of the built environment

The built environment includes everything that has been 'manufactured' rather than simply existing in nature. It includes such things as:

- Housing;
- Commercial buildings;
- Factories, production plant and equipment;
- Facilities for sports and culture;
- The physical infrastructure for transport;
- Transport vehicles;
- Communications infrastructure;
- etc.

Internal to the organization / economic activity

Some of the built environment is internal to the organization or economic activity. This built environment appears in the conventional money profit accounts in various ways:

- in the fixed assets account at historic cost;
- in the profit and loss account as depreciation; and
- in the profit and loss account under such headings as repairs and maintenance

External to the organization / economic activity

Some of the built environment is external to the organization or economic activity. This built environment does not appear directly in any conventional money profit accounting.

Quantification of the investment that was used to build this infrastructure has essentially disappeared from the accounting, resulting in an enormous distortion of almost all of the economic performance analysis that gets done.

Part of the problem is that much infrastructure construction has been done by governments and other public entities. Most (almost all) governments and other public entities use 'cash based' accounting rather than full accrual accounting. What this means is that there is no 'balance sheet' as part of the accounts, and in turn this means there is no financial accounting for the fixed assets that get funded.

Historic cost and inflation

There is another problem, and that concerns the use of historic costs to account for fixed assets in conventional money profit accounting. Because of inflation, old fixed assets will be recorded in the books of account at a historic cost that bears little relation to the current cost of replacing the assets.

An example – the MTA

The MTA (Metropolitan Transportation Authority) is one of the biggest organizations in the world, and absolutely critical to the functioning of New York City. It has a huge infrastructure much of which dates back a hundred years. The accounting records for this huge infrastructure do not exist:

- because as a public entity it does not use full accrual accounting; and
- because conventional accounting writes down old assets to nominal values.

Maintenance of this huge infrastructure has been routinely underfunded for most of the history of the MTA to the detriment of its performance and the underlying value of the organization.

When a 'replacement' value is put on the MTA infrastructure it becomes clear that a reasonable level of maintenance expenditure would be an order of magnitude more than has been normal for this organization. Every customer of the organization ... many millions a day ... are impacted by this failure. The place is dirty (though not as dirty as 30 years ago) and the service is compromised (though not as badly as 30 years ago).

Enabling Environment

A network of support elements

Everything in society and the economy is affected by the enabling environment. Freedom, democracy, rule of law, security, etc. are all things that are important to quality of life and the functioning of society. The enabling environment is a network of support elements that have many components:

- Government;
- Institutions;
- Security apparatus;
- Rule of law;
- Regulations;
- Stability;
- Infrastructure;
- Knowledge;
- Culture;
- Religion;
- People and their ethics;

- People and their skills;
- etc.

Where an enabling environment does not exist or is dysfunctional, society and the economy are constrained. In many places, the strength of the enabling environment is compromised.

Government ... institutions, law, justice, security, etc

Government is an important part of the enabling environment and in most countries government entities are financially bankrupt ... they do not have the money flows to pay their financial commitments and keep things running.

The situation in Detroit that was in the news in 2013 when it declared bankruptcy is a wake up call about the serious financial condition of government entities.

Value of payment to government, into charities, etc

Payments by economic organization in the form of taxes, royalties and user fees is a positive contribution to the enabling environment.

Payments by economic organizations as charity or in some form or 'do-good' spending may also be a positive contribution to the enabling environment, depending on what use there is of the funds.

Knowledge

Knowledge that enables technology

It is knowledge as much as anything else that enabled the industrial revolution and the socio-economic progress of the past 200 or 300 years.

This continues. There has been amazing growth in knowledge over the past 50 years, and this growth in knowledge is continuing apace.

Investment in knowledge

Money spent on research and development is a positive contribution to knowledge. Money spent on research in universities has been a big contributor to knowledge over the years.

By its very nature investment in knowledge starts off with investing in something that is not known. It is this basic research that results in critical breakthroughs that enable new technology, and new industries, massive improvements in quality of life, and because of all this, one of the best investments that can be made.

Who owns and benefits from knowledge

The value to society of more knowledge is going to be more or less depending on the way the knowledge is made available to society at large.

*A better debate is needed about the way knowledge is controlled and owned.
While there is a role for patent law, is patent law serving society in an optimum manner?*

It is common for a corporate organizations to make knowledge proprietary to itself, and in so doing deprive society at large from the benefit of this knowledge.

An example of this is the case of 'orphan drugs' which have been developed and would be useful in poor settings, but which do not go into production because they have limited profit potential

MDIA methods for complex organizations

Conventional accounting for the organization

The present metrics of the organization have conventional money profit accounting at the center. Inside the organization there are a vast array of additional systems that help to optimize profit performance and perception so that there is stock price maximization.

Progress towards reporting impact on externalities over the past few years has been significant, but, compared to the established power of money profit accounting, remains tiny, and essentially irrelevant in the big decisions being made by business leaders.

Money profit accounting and reporting is tight, short and to the point. Impact reporting is anything but tight, long and in the end practically useless.

A lot needs to change.

MDIA's truvalue accounting for the organization

The money accounting aggregation is the same as a normal corporate business consolidation.

The impact on people is done using the balance sheet change approach referred to above.

The impact on planet is done using the balance sheet change approach referred to above.

How much progress in a place is attributable to the economic activity associated with organization is going to be a judgment call, but often very clear.

The organization may have a single activity, or it may have many activities located in many different places.

Inside corporate accounting, top management is interested in the aggregated consolidated results, but they are also interested in seeing the information that goes into the consolidation, the consolidating statements.

Consolidating analysis by economic activity

A large corporate organization may have many hundreds of different economic activities in many hundreds of places. Some of the economic activities may be quite benign, but others may have impacts on people and planet that are not.

The value of a consolidating analysis is that the performance of each specific economic activity is on the record, and because it is associated with a specific place, the validity of the information may be determined by inspection at the location.

To the extent that a corporate organization is unwilling to make available information about its economic activities in various places, it is possible for the public to 'fill in' the information by external reporting on the performance of the organization and its economic activities at any location.

Consolidating analysis by product

Similarly a large corporate organization may have many hundreds or more likely many thousands of products that are either consumed by the economic activities of the organization or are produced by these economic activities.

Some of the value chain of a product will be within economic activities that are being operated by the organization and some parts of the value chain will be operated by other organizations.

The total organizational performance will have two parts:

1. the part that is taking place within the economic activities run by the organization; and,
2. the part of the supply chain, the use and the waste chain that is operated by others.

Both have to be associated with the reporting of the organizational entity.

Not-for-profit performance

It is not enough to judge impact in a not-for-profit setting by how much doing something has cost the organization.

The critical question is not how much an activity has cost, but how much has the organization accomplished, which may have little relationship to the money costs disbursed.

This has been a chronic weakness in the management systems of institutions like the World Bank, USAID and others ... and still is.

DMIA uses the same analytical framework for both for-profit organizations and not-for-profit organizations. In both cases the money flows show the profit or loss (surplus or deficit is the same thing), and the truevalue impact on everything else is computed using the same MDIA methods no matter what type of organization.

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