

## **Value Creation and how it relates to technological and cultural innovation**

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### *Abstract:*

*Value is a wide concept that serves to determine the “objective output” in any decision-making process. Departing from the VM standard NP12973:2000, my understanding of value has turned into: “a measure which expresses how well an outcome of an action or event (not only organization, project or product) satisfies stakeholders’ needs in relation to the resources consumed”. Value can be, in its form, tangible – subject to transaction, or intangible – subject to transmission. There is a clear need to differentiate between value creation and other value activities. Therefore, I propose that we must consider clearer definitions for “value creation”, “value generation”, “adding value”, value improvement”, “value consumption” and “value destruction” It is also my understanding that technological innovation and cultural innovation are associated in many cases of product innovation. Technological innovation creates “tangible “ value, while cultural innovation creates “intangible” value.*

Keywords: value creation, Innovation, tangible value, intangible value.

### **1. Introduction**

The concept of value varies among different disciplines that use some sort of definition for “value”.

Based in literature, Jensen (2005) identified six categories of value: (1) religious values – values as belief system; (2) behavioural values – values as moral and ethics; (3) economic value – value as exchange; (4) use value – value as utility; (5) cultural value – value as meaning and sign; and (6) perception value – value as experience. Used in the plural, value is seen as meaning belief and social behaviour. Used in the singular, value is understood as expressing the worth of something.

It seems that religious values and behavioural values are part of a “fundamental dimension” that influences the development of the other value concepts.

Cultural value and perception value are very difficult or even impossible to be measured in an accurate and comparable manner, thus considered being intangible (Fernandes 2012). Cultural value has a collective scope, and it can be transmitted from one person to another, not implying the loss of the original value at the source. Perception value has an individual scope and it is more difficult to be transmitted from one individual to another. Intangible value, due to its nature is not subject to transaction in the form of exchange or barter.

Economic value results from a process of commoditization (Kopytoff 1986) of a thing with use value, expressed by some kind of quantification in both, therefore considered being tangible (Fernandes *ibid.*). Tangible value can be transacted in the form of exchange or barter, and it always implies the giving away of something in exchange to something else in return.

It is my argument that value is a wide concept that serves to determine the “objective output” in any decision-making process.

Departing from the VM standard NP12973:2000, my understanding of value has turned into: *“a measure which expresses how well an outcome of an action or event (not only organization, project or product) satisfies stakeholders’ needs in relation to the resources consumed”* [italic denotes the original definition in the VM standard].

Value can be, in its form, tangible – subject to transaction, or intangible – subject to transmission, and any outcome of an action or event, like a product, can incorporate both concepts at the same time.

This has led me to research why and how can it be, some how, measured, despite the fact that it may look paradoxal, and what can any potential sort of quantification tell and help us in understanding the full dimension of value..

## **2. Literature review and comments.**

In order to understand how to measure value in its full dimension, one needs to consider an important side of the subject: how does it happen? This question takes us to two issues: (1) value creation, and (2) innovation.

### **2.1 Value creation**

At its most basic level, “nature” does not apply the concept of value when transforming one element into other, as the sum of all is a constant. However, since

life exists, we may find that all living beings were in constant competition with one another, and the concept of value was immediately applied since the very beginning, when making decisions related to survival. Although nature does not create or increase value at its most basic level, living beings may find that the results or outputs of some activities and events may bring value to them in some form or shape. Life prospers where it finds more increased or created “natural value”. Although we may say that natural value is not measured or manipulated by living beings in nature, we have proof that some forms of life in a higher rational stage are able to understand the value of things, as they use them for different kinds of activities and even exchange them for some kind of favour or benefit (Biro et al. 2003; Boesch C. 2003). *The destruction of value in nature does not exist, as the existing paradigm is based on the transference of value from one element to another* (Fernandes 2012).

*Value creation is the result of processes, and it can be positive, resulting in added value, negative, resulting in value destruction, of neutral, resulting in no value change. Value creation derives from the conceptual acceptance of user/consumers of a certain process output. Any output results from an applied process on an input, through the utilization of labour, machinery and tools, and energy, according to a certain procedure. Value is created as the result of the applied materialization process in conjunction with the kind of value form achieved, expressed in a model dealing with two wide variables (value form and value materialization). The value form varies from tangible to intangible. The value materialization is concerned with the simplicity or complexity of the process utilized to create value.* (Fernandes ibid.).

It is my argument that we need to clearly differentiate between value creation and other value activities or definitions. Therefore, it is my understanding that:

- a) Value creation is related to a first time process of transformation of inputs into outputs that starts at the idea conceptualization and passes through a technological development process and/or a cultural development process and reaches users at the utility and resources consumption satisfaction levels. (This is in accordance with an existing proposal for the definition for value creation made by the Portuguese Standardization technical committee (TC) for the revision of the EN 1325 – Value Management, vocabulary: “*Value creation: the realization of a new product or service or its improvement through the utilization of tools or methods in a Value Management perspective*”).

- b) Value generation (production) is related to a process of transformation of inputs into outputs based on an existing value relation.
- c) Adding value is related to a process of aggregation of one type of value to other, normally intangible value to tangible value, through a commoditisation process.
- d) Value improvement is related to the changes for better in an existing ratio between inputs utilized and outputs obtained in a value generation situation.
- e) Value consumption is a process of using value, through a process of consumption that destroys it, needed to keep a certain status quo.
- f) Value destruction is a process of eliminating existing value, by purpose or by accident, being the output of lesser or no value.

## **2.2 Innovation**

Innovation is widely accepted as the process of taking new ideas or discoveries to the market successfully. According to Cummings (1998) innovation refers to a successful first time application in the market of a firm's product or process. Many ideas and discoveries do not make it to the market, or if so, they are not accepted, thus, they are not innovations. Abernathy and Clark (1985) agree with the concept and even connect the meaning of innovation to the creation of value added. Innovation is also "*... a firm's tendency to engage in and support new ideas, experimentation, and creativity for the development of new processes*" (Lumpkin and Dess 1996, p. 142). According to Piana (2003) "*innovation is the complex development of discoveries (eg. new physical laws) and inventions (eg. a new machinery) brought in the business and social environment (eg. introduced on the market), hopefully leading to diffusion (adoption by new users)*". Schumpeter (1934) even considered innovation as "creative destruction" when new technologies substitute the old. Today, the most well accepted definition is in the Oslo Manual: "*An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations*" (OECD 2005, 46).

According to the Oslo Manual, there are four major types of innovation: "product innovation" – introduction of new product (good or service) or major improvement of their characteristics; "process innovation" – implementation of new

or significantly improved method in production or distribution; “marketing innovation” – implementation of a new marketing method, evolving changes in design, packaging, placement, promotion or pricing; and, “organizational innovation” – implementation of a new organizational method in the firm’s business practices, organization of workplace or external relations (OECD 2005).

The Oslo Manual still defines that the diffusion of innovation is developed at three different levels: new to the firm; new to the industry/market; and, new to the world.

There is an incessant urge for the creation, adoption and diffusion of innovation in our society (Pol and Ville 2009). Innovation can be classified in different sort, like business, social, artistic, for example (ibid.). The business innovation itself can be classified in other sub-levels, like “*technological innovations (new or improved products or processes) or organizational innovation (changes to the firm’s strategies, structures and routines)*” (ibid. p.881). However, if we consider the objective of the innovation, we can classify it as towards the users and consumers (external) or towards the organization (internal). External or towards the users and consumers covers the product and the marketing fields, and internal or towards the organization covers the process and organizational systems.

To Hamaleinen and Heiscala (2007) there are five ideal types of innovation: “*Technological innovation are new and more efficient ways to transform the material reality, and economic innovation puts technological innovation to the service of the production of surplus value. Taken together those two classes from the sphere of techno-economic innovations (...) Regulative innovations transform explicit regulations and/or the ways they are sanctioned. Normative innovations challenge established value commitments and/or the way values are specified into legitimate social norms. Finally, cultural innovations challenge the established ways to interpret reality by transforming mental paradigms, cognitive frames and habits of interpretation. Taken together these three classes form the sphere of social innovation*” (p. 59). Heiscala (op. sit.) clarifies: “*social innovations are changes in the cultural, normative or regulative structures [or classes] of the society which enhance its collective power resources and improve its economic and social performance...*” (p.59). Pol and Ville (op. sit.) argue that “*any new idea meeting a social need developed by a profit-seeking firm turns out to be a social innovation, and thereby, every business innovation is a social innovation*” (p.888), which may lead us

to consider that it must be also applicable in the reverse direction as a way to create new businesses opportunities and, consequently, new innovations.

Cultural innovation related to product choices seems to have also an impact on peoples' decisions that guide their lives (Schwartz 1994). Cultural innovation can imply the use of a product or not. Any product related to a process of cultural innovation will acquire some intangible value. Cultural innovation can be the cause for a product creation and vice versa (Fernandes 2012), even if in most cases it may be difficult to distinguish and agree about what comes first.

It is my argument that in the business innovation field, there are three major drivers for innovation, which are the root-cause for innovation:

New needs and wants of customers and users, which derive from:

- needs for new functionalities (new attributes) at the product (good or service) level, in the scope of use value, cultural value and perception value;
- needs in the operational field (ease of utilization towards robotization) at the user level, in the scope of use value; and
- needs for new designs (fashion alternatives) at the aesthetic level, in the scope of cultural value and perception value.

New contexts (in the market) – the new contexts in the market are provoked by environmental and cultural changes related to all stakeholders, and they derive from:

- general (political, economical and social) needs that affect the population;
- rivalry changes (among type and number of competitors) due to variations in demand; and
- environmental stress (scarcity of natural resources) changes due to availability of natural resources.

New capabilities (in the industry) – industries can adopt certain capabilities from inside or from other industries, and those derive from:

- knowledge (scientific and technological) knowledge coming from fundamental research and other R&D activities in other industries that have application in an industry;
- new applied technology (hardware and software) related to product or process development from other industries that can be applied (adopted) in an industry;

- inputs (new materials) from new R&D processes that can be utilized in replacement of existing ones.

In terms of impact and diffusion, in the business innovation area, these are the three widely accepted definitions for the major types of innovation:

- Radical (new to the world) – new products and/or organizational forms, encapsulated in a complete new value curve/value profile and not comparable with any existing solution;
- Differential (new to the market and industry) – new products and/or organizational forms encapsulated in new value curve/value profile, but still comparable with similar existing products or organizational forms.
- Incremental (new to the firm) – existing products and organization forms to which changes in value curve/value profile have been introduced, but leaving new solutions still comparable with the majority of existing similar products or organization forms.

In terms of scope, in the business innovation area, there are four major types of innovation, widely accepted:

- Innovation at the product (good and service) level, that refers to the introduction of new functions or changes in existing products' functions (related to product attributes/functionalities demanded by consumers – thus, demand driven), the creation of new designs or adjustments in existing products' designs (related to the aesthetic side of the product supplied by the inducer – thus, supply driven), and the usage of new or substitute input (related to resources' offer – thus, environment driven).
- Innovation at the processes level, that refers to the creation of new methods or adjustments in existing methods (related to utilized technology – hardware and software – thus, process driven).
- Innovation at the organizational level, that refers to the introduction of new or changes in existing management systems (related to the organizational structure, the ICT, and institutional relations with stakeholders – thus, organization driven).
- Innovation at the marketing level, that refers to new or changes in existing marketing strategies (related to promotional processes, image creation and development, and distribution network – thus, marketing driven).

Value Creation is a result of Innovation. Without innovation there is no value creation. In addition to that, it is my understanding that technological innovation and cultural innovation are commonly associated in many cases with most product innovations.

Technological innovation creates “tangible” value, while cultural innovation creates “intangible” value. Tangible value is subject to transaction (exchange or barter) and intangible value is only subject to transmission. Tangible value and intangible value are core concepts in the value creation process.

Therefore, in the process of taking an (intangible) idea to a (tangible) product (good or service) I have identified four types of innovation that are related to the relative position of one product value curve (or profile) in comparison with other product or group of products common value curve: (1) breakthrough; (2) turning-around; (3) adding-value; and (4) up-grading (Fernandes 2008, Fernandes and Martins 2011).

*The breakthrough innovation means that the final solution is a new unique product, answering new needs and delivering new functions. Every existing product was once first introduced into the market as a result of something new. The telephone, the radio and the television were all in the first instance real breakthroughs. The breakthrough innovation happens many times by serendipity or mistake. The x-ray was the result of the discovery of the radiation properties of uranium, by the Currie couple. That was the trigger to make use of such condition in new applications. Something that was unthinkable could then become a reality.*

*The turning-around innovation is applied in the creation of an alternative product to replace an existing one, but with less functionalities or performance, at a much lower price, covering the basic needs on the base of the consumers pyramid. In order to produce a new product with less functionalities and lower performance, but at a much lower price for consumers, some kind of new technology or other capabilities is needed, which will make such realization viable. This is similar to Christensen’s disruptive innovation.*

*The adding-value innovation is applied in the development of new functionalities and in the increment of performance of all attributes in an existing product, responding to specific needs of a market segment and creating a new dimension of the existing product. Often this corresponds to the premium versions of a product, like in the case of cars and watches.*



*Finally, the up-grading innovation is applied to differentiate an existing mature product, still serving the same market segment, but pushing up on the satisfaction of consumers' needs. Up-grades on some commodities or services are normally small innovations that try to differentiate the product from competitors, achieving such result for a short limited time only, while competitors do not react. This corresponds to the simple and incremental innovation, also named sustainable innovation by Christensen. (Fernandes and Martins ibid., 876)*

### **3. Value measurement**

Taking Jensen's (2005) six categories of value (religious values; behavioural values; economic value; use value; cultural value; and, perception value) and my understanding of how these six categories are grouped (religious values and behavioural values are related to the "fundamental dimension" that supports value creation; cultural value and perception value are related to intangible value; and economic value and use value are related to tangible value), we can determine the cause and effect interrelations that can build a scorecard at the level of the "soft" VM - Value Management (the level of the business strategic decision related to what value is in any specific situation), always relating to all identified or determined stakeholders.

Departing from other concept of scorecard (Kaplan and Norton 1992), and also relating to all identified or determined stakeholders, a scorecard to evaluate value becomes of need at the level of "hard" VM- Value Management (the level of the business operational activity related to what value is for stakeholders).

Based on the previous review, it is my argument that VM, as a management concept and model that considers value as its core, adopts two levels of value scorecard: one at the "soft" level and other at the "hard" level of VM, always related to all determined stakeholders, as following:

1. Soft Value Scorecard.

- Fundamental Dimension:

Behavioural Values (moral and ethics) + Religious Values (beliefs).

This dimension covers the study of social fundamentals that will impact the understanding and the determination of value through the intangible and tangible dimensions down to the solution dimension level.

- Intangible Dimension:

Cultural Value (meaning and sign) + Perception Value (experience).

This dimension covers the study of the influences of the collective meaning and sign and of the individual experience in the decision making process at the solution level, in the market, business, individual and environment areas.

- Tangible Dimension:

Use Value (utility) + Economic Value (exchange).

This dimension covers the study of the relationship between utility and exchange value, at the solution level, in the market, business and environment areas.

- Solution Dimension:

Value Profile.

This dimension covers the study of potential options and the decision-making of the targeted solution.

2. Hard Value Scorecard

- Objectives (Growth) Dimension:

Outcomes of Value Analysis and others.

This dimension covers the final outputs, resulting from the relationship between the satisfaction of needs and wants and the resources used in achieving the level of satisfaction.

- Functional (Demand Satisfaction) Dimension:

Outcomes of Functional Analysis.

This dimension covers the study of all internal and external environments, covering all stakeholders.

- Operational (Processes) Dimension:

Outcomes of operational solutions and processes.

This dimension covers the development of methods, based on tools.

- Innovation and Development Dimension:

Outcomes of Management Style, Human Dynamics, and Systems.

This dimension covers the setting up for VM, through an adequate leadership, work environment, teamwork, learning, and organizational structure and supporting systems.

#### 4. Conclusions

The theoretical proposed value scorecard model is the result of an empirical

conceptualization based on other existing evaluation models.

Its current application in real business situations is still limited to a few practical cases, which do not serve as a deep validation process. However, the current on going applications of the proposed model in some different organizations, small and medium size companies, is showing that the concept brings a lot of sense to the way the organizations define and structure their business strategies at the product and market approach levels, and at the operational and resources levels.

Despite the difficulty in determining indicators to all involved variables along the two levels of the scorecard, the current practice has been able to identify enough qualitative and quantitative ratios that indicate that, like in other evaluation models, there is a strong linkage and correlation among them.

Using inter-related ratios that contain indicators from different dimensions helps to understand the correlations and to validate the decisions.

Its is important to say that the two central dimensions, related to “what” comes out as output in each scorecards, have complementary meanings, despite the differences in the type of identified or established indicators.

Further empirical research is needed to validate the concept, through the application of the model in many other real business cases, in order to validate the applicability of the concept. Then, the development of an application to work the correlation among variables, and determine objectives and pop out alerts for deviations would be advisable to simplify the application of the model in organizations.

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