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Mastering value creation in the knowledge economy demands an appreciation for the pivotal role of intangible capital and a thorough understanding of network dynamics.

**THE FOCUS ON INTELLECTUAL CAPITAL** and other intangible assets that has emerged in recent years is opening up a series of questions with profound implications for business leaders, policy makers, accounting professionals and economists. Around the world, people are engaged in a struggle to reframe business and economics in an environment of global interdependency, environmental concerns and larger societal responsibility. Intellectual capital and intangibles offer a possible pathway for reconciling business and economic models with a growing understanding of

the 'web of life' and a consideration of how economic activity impacts and is influenced by the health and well-being of society and the environment.

Until now, economic exchanges have been thought of in terms of goods, services and revenue. However, this 'value chain model' represents a linear, mechanistic view of business that is based on the Industrial Age production line and is woefully inadequate for those seeking to understand the complexities of value in the knowledge economy.

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# CONVERSION OF TANGIBLE AND ASSETS

One of the most challenging questions for modern business people is, “How can we convert intangible assets such as human knowledge, internal structures, ways of working, reputation, and business relationships into negotiable forms of value?” Intangible assets are converted into value when, for example, an asset such as ‘professional expertise’ is converted into another form of value such as ‘consulting services.’ The conversion dynamic also applies to value realization: when a tangible value input such as ‘purchased market intelligence reports’ is converted into a non-financial knowledge asset of ‘increased levels of marketing competency.’


In this article I will show that Value Network Analysis offers a way to model, analyze and improve an organization’s capability to convert both tangible and intangible assets into other forms of negotiable value.

## Mediums of Exchange

While the value-chain model served us well for much of the 20th century, modern firms and business webs are ‘living networks’ that

engage in much more than material exchanges: these systems have intelligence, which means that they engage in cognitive exchanges. Indeed, success in this environment depends upon exchanges of information, knowledge sharing, and open cognitive pathways that allow for optimal decision making. These exchanges have become so essential to the success of the modern enterprise that they must now be considered ‘economic exchanges.’ However, knowledge and other intangibles behave differently than do physical resources, and it is a mistake to simply treat them as tangibles. In describing the value model of a business, one must consider two separate orders of economic exchange: *tangible* and *intangible*.

In Value Network Analysis, tangible exchanges are defined as *contractual* transactions involving goods, services or revenue, including but not limited to physical goods, services, contracts, invoices, return receipts of orders, requests for proposals and payments. Knowledge products or services that directly generate revenue, or that are expected (contractual) and paid for as a part of a service or good (e.g. reports or package inserts) are also consid-



ered tangible exchanges. The determination of whether a deliverable is considered a tangible or intangible is thus dependent on its *contractual* nature, not its physical nature.

Intangible knowledge and information exchanges flow around and support the core product and service value chain, but are not contractual. Intangibles are those 'little extras' that help keep things running smoothly and build relationships, including exchanges of strategic information, process knowledge, technical know-how, collaborative design work and policy development. These intangibles tend to be informal, not part of the 'contract,' and are rarely deliberately negotiated or managed. Intangible exchanges include any benefits, advantages, or favours that can be extended from one person or group to another. For example, people often 'trade favours' in order to build relationships. Intangible benefits often reveal the real motivational factors for people to engage in relationships and specific activities.

Money is an enabler of value conversion because it allows people to convert things to units of like measure and trade those units in a marketplace, instead of trading physical goods. The majority of intangible transactions, on the other hand, remain in the realm of the intangible and are never converted into units of like measure – *nor do they need to be*. The most visible way intangibles go to market is when they are converted into a good or service that has financial value. However, the effort to convert every type of value into a common unit of measure is fundamentally the wrong approach to the intangibles economy. Carried to its extreme, it leads to proposals for systems of 'micro-credits' for ideas. This would entail treating ideas and knowledge as if they were 'things' instead of emergent properties of networks.

Intangibles, then, must be understood *as* intangibles, which includes understanding how they are converted into other negotiable forms of value – and just as importantly, when and why they are *not* converted.

### Organizations as Value Networks

Once we begin to view organizations as 'patterns of exchanges,' it becomes readily apparent that our old ideas of organizations are due for revision. From a systems-thinking perspective, it is more useful to think of organizations as *value networks*. A value network is any web of relationships that generates tangible and intangible value through complex dynamic exchanges between two or more individuals, groups or organizations. Any organization or group of

organizations engaged in both tangible and intangible exchanges can be viewed as a value network, whether it be private industry, governmental or public sector.

The concept of an organization emerged at a time when most businesses were bureaucracies designed around strict hierarchies. The human boundary of the organization was, and still is, largely determined on the basis of who is an employee or member. That was useful for a while because larger companies, in terms of financial transactions and revenue, also had larger numbers of employees. Today, however, revenue and employee numbers don't match up as neatly, as demonstrated by the huge populations of members participating in **eBay** and **Amazon** that contribute content or referrals. Now, a company with relatively few actual employees can have a value network that includes tens of thousands of suppliers, millions of members, and billions of dollars in revenue.

Today, corporations are often organized more like a business network than a traditional company. Workers increasingly operate in a virtual environment, and project team members can be scattered all over the planet. Business units and service groups may bid for projects and compete directly with outside suppliers to provide services to their own company. Increasingly, one finds businesses-within-businesses-within-larger-businesses-within-business webs. In such systems, hierarchies become irrelevant and frequently unnecessary, and the question of 'how is value created?' becomes increasingly complex.

### Value Conversion

Value conversion is the act of transforming financial to non-financial value or transforming an intangible input into a financial gain or asset. The theme of value conversion runs through *Social Exchange Theory* (SEC) and is a key question in the field of Socioeconomics. Some advocates of the intangibles perspective have expanded the boundaries of SEC by suggesting that relational or social capital is the catalyst for 'interconvertability,' whereby different capital forms flow in multiple directions. This intraconvertability of value is a foundational dynamic of a knowledge-based economy.

Knowledge as human competence, an intangible asset, is one of the most interchangeable commodities: it can be traded for more knowledge; it can be traded for another form of intangible value, such as a favour or benefit; or it can be packaged and sold for profit as a tangible form of negotiable value. Whenever one type of

Transactions			Impact Analysis							
Deliverable	From	To	What activities generated	Impact on financial resources	Impact on intangible assets			Overall cost/risk	Overall benefit	Perceived value in view of recipient
					Human Competence	Internal Structure	Business Relationship			
										+2 +1 Neutral -1 -2
Intangible										
Tangible										

Note: The table configurations are available open source in the Excel®-based Gen/sis™ workbook, which is part of the Gen/sis™ Value Network Suite of tools and applications available at <https://sourceforge.net/projects/gen/sis>.

value has been created or realized from another, a value conversion has been executed.

The value conversion question runs in two directions:

1. How does one convert *inputs* into value or gain (financial and non-financial)?
2. What kind of intangible value *outputs* can one create from both tangible and intangible assets?

When considering value conversion, it is necessary to assess the inputs and outputs for each role in the value network to determine whether value conversion opportunities are being overlooked. For example, a financial services company had been providing a series of standard reports to its customers. Assessing value-conversion opportunities helped the company realize that many of the reports it provided for free could be packaged more attractively, enhanced with expert analysis and sold for a fee. Thus, the company executed a value conversion by transforming an intangible asset of knowledge or expertise that had been formerly used as an intangible (free) output into a tangible form of value that could directly generate revenue.

Participants in a value network utilize their tangible and intangible asset base by assuming or creating roles that convert those assets into more negotiable forms of value that can be delivered to other roles through the execution of a transaction. In turn, the value of deliverables received is realized by participants when they convert them into gains or improvements in tangible or intangible assets.

**Value Network Analysis**

Whereas organizations are typically referred to as discrete entities, they actually consist of real people playing a variety of roles,

each of whom controls a set of tangible and intangible assets or resources that support the execution of that role. People (as individuals, groups or organizations) play their role by processing those controlled assets and resources into negotiable value outputs.

The organization chart is the traditional way people attempt to describe recurring roles or functions in a firm. However, it is essential to understand value network roles *separately* from organizational roles. In any given activity, these roles may be the same as functions on the organizational chart, but it is more useful to consider that every job or business unit actually requires playing *a number of different roles* in different business activities. It is easier to understand value conversion by considering the role dynamics inherent in a particular activity, and not confusing the role with the person or business unit that may be filling that role at any given moment.

Growing interest in network perspectives have led to the term ‘value network’ being adopted in general business practice, primarily in regard to industry value networks, but also in regard to business webs. **IBM, Wal-Mart, Telenor, SAP** and others refer to their value networks as a way to describe their efforts to bring coherence to supply chains or to industry clusters. Technology companies are likely to use the term when discussing service-oriented architecture (SOA) in their efforts to integrate technology systems across industries.

Value Network Analysis offers a way to link specific interactions within the value-creating network directly to financial and non-financial scorecards in the following ways:

- It provides a fresh perspective for understanding the value creating roles and relationships, both internal and external, upon which an organization depends;
- It offers dynamic views of how both financial and non-financial assets can be converted into negotiable forms of value that have

# THE FIRST STEP IN DEVELOPING A VALUE NETWORK STRATEGY IS TO MAP OUT THE VALUE EXCHANGES ACROSS THE NETWORK YOU ARE FOCUSING ON.

a positive impact on those relationships;

- It explains how to more effectively realize value in role execution;
- It demonstrates how to better utilize tangible and intangible assets for value creation; and
- It provides a systematic analysis of how one type of value is converted into another.

In order to fully develop a value network strategy, it is necessary to first map out the value exchanges across the network you are focusing on. Creating a map of relationships and exchanges is like holding up a mirror to the system so the system can ‘see itself.’ People are frequently surprised during the mapping process when they discover, “Oh, so that is how things work! I thought it happened another way, but this is what really happens.” And this is what one must be able to understand: not how things are supposed to happen (as defined in process charts) but how things really do happen.

The mapping method relies on three simple elements – roles, deliverables, and transactions.

- **Roles** are played by participants in the network who provide contributions and carry out functions. Participants have the power to initiate action, engage in interactions, add value, and make decisions.
- **Transactions** originate with one participant and end with another. An arrow visualizes a directional link that represents movement and denotes the direction of what passes between two roles. Typically solid lines are formal contract exchanges around product and revenue, while dashed lines depict the intangible flows such as market information and benefits.
- **Deliverables** are the actual ‘things’ that move from one role to another. A deliverable can be physical (e.g. a document or a

table) or it can be non-physical (e.g. a message or request that is only delivered verbally). It can also be a specific type of knowledge, expertise, advice or information about something, or a favour or benefit that is bestowed upon the recipient.

Once all of the critical roles, value exchanges and transactions have been identified, analyzing a value network involves addressing three basic sets of questions.

## 1. Exchange Analysis

What is the overall pattern of exchanges and value creation in the system as a whole? How healthy is the network and how well is it converting value? Network-level indicators include measures of resilience, stability, reciprocity, risk, maturity, innovative capacity, asset utilization and strategic alignment.

An exchange analysis assesses the overall patterns of value exchange, addressing the following questions:

- Is there a coherent logic and flow to the way value moves through the system?
- Does the system have healthy exchanges of both tangibles and intangibles, or is one type of exchange more dominant? If so, why might that be?
- Is there an overall pattern of reciprocity? For example, is one of the roles extending several intangibles without receiving a similar return?
- Are there any missing or ‘dead’ links, value ‘dead ends’ or bottlenecks?
- Is the whole system being optimized, or are some roles benefiting at the expense of others?

## 2. Impact Analysis

What *impact* does each value input have on the roles involved in terms of value realization? This assesses measurable impact on financial and non-financial assets. Because roles are the critical agents for value conversion, it is helpful to explore value conversion at the level of key roles. An impact analysis shows whether a role is realizing value from the inputs it receives. Value realization is the act of turning a value input, either tangible or intangible, into real gains, benefits or assets that contribute to the success of the organization. The impact analysis is designed to:

- assess how specific value inputs are bringing value or benefit to each role;
- assess the overall tangible and intangible cost/risk and benefit for each value input;
- identify value realization opportunities to better leverage value received;
- identify potential opportunities for value conversion; and
- link the key value network transactions and deliverables to financial and non-financial scorecards.

This expanded cost benefit analysis considers not only intangible assets, but also is identifying and assessing the impact of intangible deliverables. In this way, it is possible to determine whether any given transaction is creating value and what costs and risks are incurred as a result of the transaction.

## 3. Value Creation Analysis

What is the best way to *create*, *extend*, and *leverage* value, either through adding value, extending value to other roles, or converting one type of value to another? This analysis identifies and optimizes opportunities to create new value offerings.

Value creation analysis looks at how each role adds value to the network. The roots of this analysis lie in the principles of value-added accounting and value chain analysis. The theory goes that, at every point along the value chain, value should be added to the product or service. In value network terms, this means that when a role receives a value input, ideally the people playing that role would find ways to use that input to provide greater value in the form of products and services. The value creation analysis broadens these questions to consider and assess intangible as well as tangible value.

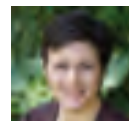
Value creation analysis is focused on the value creation and *output* of each role, much as impact analysis looks at how a role gains or benefits from an *input*. Of course, if participants can both gain value for themselves and also leverage that input for a greater value output, then that is really maximizing value. Like impact analysis, value creation analysis is basically an expanded cost/benefit analysis, with a focus on asset utilization. The key questions are:

- How well are financial and intangible assets being used to create this value output?
- What value features or enhancements are provided with this output?
- What is the level of benefit to the business in providing this output?

### In closing

The key to understanding the knowledge economy lies in not only understanding intangibles as assets, but in coming to terms with how they are set into motion within unique configurations of roles, relationships, interactions and resources in value conversion networks.

The struggle to come up with a viable theory of 'knowledge economics' continues. Value Network Analysis can provide a systematic way for approaching the dynamics of intangible value realization, conversion and creation, offering a viable approach for those trying to grasp the economic principles of creating value from intangibles. **R**



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