

INFORMATION AGE ORGANIZATION: MOVING FROM INFORMATION TO KNOWLEDGE TO LONG-TERM SUCCESS

Honora M. Rockar, Robert Morris University, hmrst5@mail.rmu.edu

ABSTRACT

This paper discusses the relationships among information technologies (IT), the organizations these technologies support, as well as the employees and all those who rely on the organizations for their livings, products, or services. In addition, this paper relates the environmental and ethical issues that IT professionals should and must take into consideration when making decisions regarding IT implementations. IT professionals must incorporate a broader perspective and develop a better understanding of the consequences their decisions can have not only for their organization but also for all us who inhabit this good earth. Finally, this paper argues that IT professionals must take a leadership role within their organizations to ensure these issues are heard at all levels so that social and ethical responsibilities are addressed along with issues for short-term and long-term success. All of these issues must be addressed by working collaboratively to create and implement high-quality decisions. Drawing upon and extending this position, a hypothesis is presented that directs the future study of decision-making processes of groups within an organization with the objectives of identifying a methodology for successfully negotiating and solving complex problems and then applying this methodology to the development of technologies to support those collaborative efforts.

Keywords: Information Technology, Business Ethics and IT Ethics, Strategic Management, Corporate Responsibility, Stakeholder Management

INTRODUCTION

This paper is a consolidation and extension of my previous position papers written and presented for the Information Age Organization course for the Doctor of Science in Information Systems at Robert Morris University during the fall semester of 2007. My intention is to summarize my previous positions and then relate those positions in support of my argument that information technology professionals can and must use their position to influence the fundamental character, operation, and long-term success of organizations in the information age. I then go on to present a definition and hypothesis for future, experimental research that might identify a method for information technology professionals to take the

lead by modeling and facilitating the required negotiation and decision-making skills to solve such complex problems as well as identifying and defining information technology requirements to support such collaborative efforts.

In my paper, *Being "Cool" and Being Productive*, I illustrated how air cooling technology allowed workers to increase their productivity due to the "cool" comfort that air conditioning provided. Drawing from the historical descriptions of Constable and Somerville in their book, *A century of innovation: twenty engineering achievements that transformed our lives*, I found that well into the first decades of the 20th century, air conditioning was non-existent until the problem was solved, most notably, by Willis Haviland Carrier in 1902. Working for the Buffalo Forge Company on heating and cooling systems, Carrier came to understand the complex relationships among air temperature, humidity, and dew point. He realized that air could be dried by saturating it with chilled water to induce condensation. In 1907, Carrier created and patented a device, Dew Point Control, which allowed for the precise control of temperature and humidity necessary for air conditioning.

Constable and Somerville stated that high temperature and humidity made summers in the southern cities as well as many northern cities insufferable. For example, Washington, D. C., was a virtual ghost town in the summer months. And, as late as the 1940s, the 60-story Woolworth Building and other skyscrapers in New York City were equipped with window awnings on every floor. With the invention of air conditioning, the design of new office buildings, factories, and homes changed. And most significantly, businesses and people moved south with the nation's fastest-growing states in the southeast and southwest. These areas could not have been inhabited until air conditioning made the summers tolerable. By the end of the 20th century, just about every form of indoor space (office buildings, factories, hospitals, and homes) was climate-controlled and comfortable throughout the year, come heat wave or humidity [6].

However, I also stated that human deaths continue to occur during heat waves in the United States and

elsewhere when individuals do not have access to and cannot afford air conditioning systems to keep themselves cool. In her book, *Cool Comfort: America's Romance with Air-Conditioning*, Marsha Ackermann discusses how the socially elite could escape to their cooler summer homes while the poor, elderly, and sick were left to swelter and die in cities during heat waves. And, these types of deaths still occur during heat waves when individuals do not have the financial means and ability to cool their living quarters [1].

From this discussion, I attempted to suggest how those of us involved with information systems and the technologies on which those systems and technology workers rely upon must broaden our framework to include an awareness of the total cost of the resources and delivery mechanisms. While we need to create and support energy-efficient computing for the 21st century, we must take into consideration those in the world who can't afford to be "cool" and find methods to respond to their needs within and outside our organizations [16].

In my paper, *Some Service Please!*, I argued that Nicholas G. Carr in his article, *IT Doesn't Matter*, was correct in the notion that technology, itself, lost its strategic importance [4]. However, I noted that the information stored, retrieved, manipulated, and transmitted through the technology remained of strategic importance to the enterprise. That is, the knowledge created from the information by knowledge workers and used by executive officers in their decision-making, guiding the strategic direction of the enterprise. I suggested that in addition to managing technology investments properly, technology professionals must consider how to develop service mechanisms to properly create and deliver information to members of the organization in a timely, accurate, and secure manner for the benefit of the enterprise [17].

In this paper, I will argue that it is the responsibility of technology professionals whether Chief Technology Officer (CTO), Chief Information Officer (CIO), Director, Manager, or member of the Information Technology team, to promote the ethical and responsible use of the organization's information and systems. In addition, I will argue that the new knowledge created by individuals within the organization is derived as much from their ideals as ideas. Next, I will argue that those ideals and ideas as well as the workers who created them must not be exploited by Chief Executive Officers (CEOs) in response to shareholder pressures for short-term results. Rather, it is the responsibility of all chief

executives (C-Level) to consider the long-term viability of the organization, the organization's relationship with its workers, and its position within the global community.

As in my paper, *PTC: Information Technology Department*, I cited Herbert A. Simon when he pointed out that administrative theories confined themselves too closely to the mechanism of authority and failed to bring within their orbit the other, equally important, modes of influence on organization behavior, refusing to undertake the tiresome task of studying the actual allocations of decision-making functions [20]. From this perspective, I will argue that Stakeholder Theory and Enlightened Stakeholder Theory as well as a leadership framework and negotiation techniques as well as their application to the enterprise, including its information systems, provide those valid administrative principles and that these principles create collaborative, decision-making methods, leading to the ethical operation, long-term viability, and overall success of the organization [18].

Moving from Information to Knowledge to Long-Term Success

Initially, I will identify the difference between information and knowledge, indicating the value of knowledge and knowledge workers to the organization. Then, I intend to discuss the relationship of information and knowledge in directing management processes and practices to worker productivity and corporate performance. I'll relate corporate performance to corporate governance and then to the notion of corporate social responsibility. At that point, I'll expand the interests of the organization from obligations to stockholders to obligations to stakeholders, defining the notion of stakeholders. Finally, I'll demonstrate that managing an organization according to stakeholder value requires reframing and changing the organization in terms of vision, leadership, negotiation techniques, collaboration, and strategy.

Information vis-à-vis Knowledge

For the purpose of this paper, information is defined as a collection of computer data at any stage of processing, as input, output, storage, or transmission; whereas, knowledge is defined as facts or states of knowing; clear and certain mental apprehension according to *Webster's College Dictionary*, 1995 [7]. In other words, information is raw unstructured data with no real, intrinsic value. Knowledge requires a mental act by an individual or group to identify, analyze, interpret, and transform the data into

something useful. In order to be useful, that knowledge must be communicated in a timely manner to appropriate individuals within and, if necessary, outside the organization to achieve the organization's identified goals. However once information is transformed into knowledge, the question becomes how can we, as information technology professionals, ensure its proper use?

Worker Productivity, Corporate Performance, and Management Processes

In her article, *The Knowledge-Creating Company*, Ikujiro Nonaka states that "in an economy where the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge." Nonaka insists that not many managers understand the nature of the knowledge-creating company or even know how to manage it [14]."

In today's competitive global environment, workers world-wide are required to handle increasingly complex information and other systems with greater speed, less service support, and more pressures to create knowledge. This knowledge is then acted upon by chief executives (C-Level) and other senior-level executives in directing the organization.

Henry Mintzberg in his pronouncement on his website, mintzberg.org, and his summary in the *Harvard Business Review*, states that the productivity gains over the last decade can be attributed more so to the organization's reliance on existing products, brand name, and customer goodwill than the development of new, outstanding products and services. Holding down operating costs while drawing from existing assets, this method can generate revenue, possibly show profit, and increase the stock price over the short-term. However, Mintzberg notes the method requires the downsizing or rightsizing of the organization. Whatever the descriptive term, downsizing or rightsizing, it is the elimination of operating workers and middle managers.

He believes organizations coined the term, human resources, in reference to their workers because resources are *things* rather than human *beings*. Organizations can dispense with *things* without emotion or regret. However, those human beings are not just things and, in fact, carry with them the tacit knowledge of the organization no matter the extent of the installed technology or depth of the information within the system. These workers provide the differentiation. They care about customers and are

concerned for quality products and services provided by the organization [11, 12].

If we consider Nonaka's position and Mintzberg's pronouncement and relate those statements to the current management policies and practices as well as patterns of organizational learning, adaptation, and response to external and internal stimuli, we see a lack over the past decade or more for organizations to manage and learn from external or internal sources. In an unpublished paper from Linda Argote and Joseph McGrath titled *Group Processes in Organizations: Continuity and Change*, we see a discussion specifically of new product development teams which states that organizational effectiveness depends on managing the demands of interest groups and obtaining critical resources [2]. What is the responsibility of information technology professionals to knowledge workers, workers in general, and their organizations in relation to productivity requirements, corporate performance, and management practices?

Corporate Governance, Data Governance, and Corporate Social Responsibility (CSR)

At this point in time, corporate governance involves board directors and senior executives in balancing the economic, technological, and legal setting in which the organization operates. Corporate governance guides the ways in which this context stimulates and limits corporate behavior and performance. In his recent book, *Revolt in the Boardroom: The New Rules of Power in Corporate America*, Alan Murray discusses how New Deal regulations kept businesses in check for a few decades from the 1940s to the 1970s but that control faded away in the 1980s and 1990s.

Unfortunately, this erosion facilitated the abuses by top level executives in such companies as Enron. In 2000, governments began to institute laws, such as, the Sarbanes-Oxley Act of 2002, to rein-in managerial abuses. And, financial organizations began requiring more from boards and their directors. Reluctantly, boards began acting as checks; hence, forcing the resignations of CEOs such as Carly Fiorina at Hewlett-Packard, Harry Stonecipher at Boeing, and Hank Greenberg at American International Group [13].

Michael Porter and Mark Kramer in their article, *Strategy & Society*, talk about the connection between competitive advantage and corporate social responsibility (CSR). Porter and Kramer indicate organizations have improved on the social and

environmental consequences of their activities, but the organizations are not using the most effective methods. Currently, the methods position organizations against society when, in reality, the organizations and society are inter-related. In addition, the methods are vaguely defined rather than clearly defined in terms of the organizations' strategies. Porter and Kramer suggest a social dimension related to a competitive context [15].



Corporate Involvement [15]

If, instead, corporations were to analyze their prospects for social responsibility using the same frameworks that guide their core business choices, they would discover that CSR can be much more than a cost, a constraint, or a charitable deed — it can be a source of opportunity, innovation, and competitive advantage [15, p. 80].

Porter and Kramer go on to discuss Microsoft's Working Connections (MWC) partnership with the American Association of Community Colleges (AACC) as an example of implementing a strategically directed social activity. Microsoft identified a shortage of information technology workers and educational issues, which were hampering the organization's ability to grow. For the colleges, curriculum was not standardized, classroom technology was outdated, and there was no development support for the information technology faculty. Should not all levels of information technology professionals consider social responsibility along with strategic technology investment and service management, expanding their range of IT concern from shareholders to all stakeholders?

Stakeholders and Transparency Defined

In an interview with *Ubiquity*, David Ticoll, the author of *The Naked Corporation: How the Age of Transparency Will Revolutionize Business*, defined stakeholders as not just shareholders but all who have a stake in or are affected by the organization. According to Ticoll, stakeholders are employees, customers, neighbors, and people in the global community. Stakeholders include business partners, suppliers, and all vertical or horizontal channels to the marketplace.

In order to involve stakeholders in the decisions and strategic objectives of the organization, stakeholders need to be informed. Ticoll calls this disclosure process *transparency*. But, he differentiates between *active transparency* and *forced transparency*. When an organization proactively informs employees, customers, shareholders, and all stakeholders in order to be accountable for the organization's decisions and actions, this communication channel is called active transparency.

When an organization creates an atmosphere of mistrust and employees, customers, neighbors, and the global community can only share their perceptions of the organization, this communication channel is called forced transparency. For Ticoll, forced transparency creates an atmosphere of mistrust, gossip, and insinuation. With forced transparency, the organization is missing on identifying opportunities for the organization. Ticoll believes that organizations need to create a position similar to that of Chief Information Officer or Chief Technology Officer — “someone in the organization who has responsibility for stakeholder engagement and sustainable business practices [22, pp. 1-6].”

Ticoll sees no downside to keeping stakeholders informed even if the organization is dealing with patent and copyright issues. He provides an example from the Massachusetts Institute of Technology (MIT). MIT is publishing their entire undergraduate curriculum on the Internet, allowing free access, discussion, and evaluation. After reviewing the definitions for stakeholders and transparency, should not information technology professionals incorporate all stakeholders into their evaluation process and promote transparency through their technology solutions?

Stakeholder Theory, Leadership Framework, and Balanced Scorecard

In the Data Base for Advances in Information Systems journal, an article titled *Re-Searching Paradigmatic Extensions of Existing Theory: Special*

Issue, Susan Brown, Helen Kelley, and Andrew Schwarz provide a definition for theory in information systems. This definition states pure theory determines causality, that is, what causes what. Pure theory enables the investigator to predict, analyze, interpret, infer, and then understand information systems phenomena. A framework is a model depicting relationships. A framework or model is based on correlations [3].

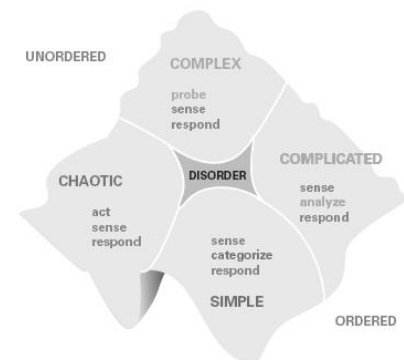
From the above definitions of theory (causation) and framework (model) in information systems, we can extend the notions to stakeholders and leadership. A website called Redefining the Corporation: An International Colloquy and funded by the Alfred P. Sloan Foundation provided the *Consensus Statement on the Stakeholder Model of the Corporation*. The statement defines stakeholder management as “an efficient combination of contributions, risks and benefits that takes account of the roles and concerns of all stakeholders. Unbalanced pursuit of benefits for any single stakeholder group and attempts to obtain contributions from any group without providing balancing benefits are incompatible with sustainable wealth-creation over the long term.” In addition, the site statement defined stakeholder management policies and processes as follows:

1. Corporations should routinely monitor the status of stakeholders and take relevant stakeholder interests into account in decision making.
2. Corporations should communicate openly and clearly with stakeholders, particularly about their respective contributions and benefits, and about the probability and severity of downside risks to which they may become exposed as a result of their contact with the corporation.
3. In dealing with stakeholders, corporations should adopt processes and modes of behavior that are accessible to relevant parties, and appropriate in view of their commitments, contributions, and risks.
4. Corporations should attempt to distribute the benefits of their activities as equitably as possible among stakeholders, in the light of their respective contributions, costs, and risks.
5. Corporations should avoid altogether activities that might give rise to unacceptable risks to stakeholders, for example, Bhopal-type catastrophes [5].

In their article, *Stakeholder Theory and “The Corporate Objective Revisited”*, Freeman, Wicks, and Parmar state that stakeholder theory asks what is

the purpose of the organization and what is the responsibility of management to the stakeholders? For Freeman, et. al, stakeholder theory enables managers at all levels to communicate widely to define and advance the shared goals and objectives of their organization’s overall strategy. With its single focus, shareholder theory restricts the communication, limits the conversation, and decreases overall content for decision making. Rather, stakeholder theory enables a wide range of answers to identified causes [9].

In fact, David Snowden and Mary Boone argue in *A Leader’s Framework for Decision Making* that during complicated situations where expert diagnosis is required, leaders should identify danger signals by encouraging external and internal stakeholders to challenge expert opinions to prevent entrenched thinking and open the discussion to possible, novel suggestions by non-experts. Snowden and Boone present their Cynefin Framework to enable leaders to identify the dominant operative context so that leaders can choose the most effective solution for the problem. Cynefin, pronounced ku-*nev*-in, is Welsh for multiple factors and represent the contexts within the framework, varying from unordered to ordered and include the complicated as well as the complex, chaotic, and simple [21].



Cynefin Framework [21]

Because information technology professionals must respond daily to various contexts within organizations, a clear understanding of stakeholder theory as well as its application to a leadership framework such as the Cynefin Framework provides Chief Technology Officers, Chief Information Officers, Directors, and Managers of information technology with the skills to evaluate, select, implement, and support systems successfully as well as, perhaps, provide a role model for ethical governance.

Short-Term to Long-Term Success

While stakeholder theory and the Cynefin Framework provide a method for analysis and ethical, open governance, Michael Jensen argues that stakeholder theory is not enough because the theory fails to specify how managers should make trade-offs among competing interests. He relates this failing to the similar problem with shareholder value where the focus is on short-term financial gain. Jensen recommends the adoption of value creation through a balanced scorecard approach. Suggesting an *Enlightened Stakeholder Theory*, Jensen adds that the objective function of the organization is to maximize total long-term market value. In short, changes in total long-term market value of the organization become the scores by which success is measured. According to Jensen, this method allows for principled decision making independent of the personal preferences of chief executives, senior executives, directors, and managers. In addition, these executives, directors, and managers become accountable for the assets under their control. The value based and balanced scorecard provides an objective measurement against which performance can be evaluated. Jensen argues persuasively for a long-term notion of organizational success [10].

I say long-term market value to recognize that it is possible for markets not to know the full implications of a firm's policies until they begin to show up in cash flows over time. In such a case, the firm must lead the market to understand the full value implications of its policies, then wait for the market to catch up and recognize the real value of its decisions as they become evidenced in market share, employee loyalty, and finally cash flows and risk. Value creation does not mean succumbing to the vagaries of the movements in a firm's value from day to day. The market is inevitably ignorant of many of our actions and opportunities, at least in the short run. It is our job as directors, managers, and employees to resist the temptation to conform to the pressures of equity and debt markets when those markets do not have the private competitive information that we possess [10, p. 3].

Stakeholder Theory and Enlightened Stakeholder Theory as well as the Cynefin Framework for leadership, and their application to the organization provide valid administrative principles for the enterprise. These principles create decision-making methods that possibly lead to the ethical operation,

long-term viability, and overall success of the organization.

Yet even with these decision-making methods, it seems we still lack the negotiation skills and collaborative tools necessary to come to agreement in order to implement quality solutions productively. In a current article, *Getting to "We,"* Peter J. Denning and Peter Yaholkovsky argue along with Lewis Perelman that people are turning to processes that attempt to facilitate such decision-making and collaboration, but our technologies do not support processes to solve such complex, messy problems — those problems without single, set answers. These authors provide the example of the clash of the *green* and *blue* agendas in information technology. Members of the green group stress sustainability, protecting the environment, and managing resources efficiently. The green group is concerned with energy-efficient designs for buildings and technology infrastructures. Members of the blue group stress information security, protecting data and systems from attacks and disasters. The blue group is concerned with secure designs for buildings and technology infrastructures. Denning and Yaholkovsky state that these groups can't agree and that "Each perspective reaches different conclusions about infrastructure renewal and best use of resources. Can our technologies help the players to develop a larger, more encompassing perspective, a sort of *blue-green* space rather than two opposing ends of a continuum" [8 p. 19]?

Drawing from this final discussion and question, I define a research proposal and draw a hypothesis, stating that individuals who attempt to implement the above or other types of frameworks and decision-making methods would be more productive and successful in reaching quality solutions to such complex, messy problems if they were trained in and implemented specific, negotiation techniques. My objectives for future research and experimental design are to identify and refine a methodology for solving complex, messy problems and, once identified, apply this methodology to the design and development of supporting, collaborative technologies [19].

CONCLUSION

As stated above, this paper is concerned with the application of technology in the delivery of information to all individuals within an organization in the creation of knowledge for the organization's success. I argued that it is for the officials within the

organization to define success not only as short-term success and stockholder value but also as long-term success and stakeholder value, treating the organization as a global community of engaged members with ideals and ideas pertinent to the organization no matter its size or scope.

As information technology professionals we must act as role models for our organizations when it comes to corporate social responsibility, to information technology investment and services management, to IT governance, information delivery, knowledge creation, and to value maximization. Chief Technology Officers, Chief Information Officers, Directors, and Managers of information technology must demonstrate the use of balanced scorecards in determining value for the organization so that at the drop of the share price, even as the organization remains profitable, our knowledge workers and all workers are not escorted out the door as sacrificial offerings to the financial industry.

Finally, from this discussion, I identify the need for future, experimental research that can direct our efforts in defining the negotiation techniques and developing the collaborative tools that information technology professionals and all those involved can draw upon to implement solutions to complex, messy problems. We must use all of our frameworks, models, and leadership skills to move the Information Age Organization from information to knowledge to long-term success.

REFERENCES

- Ackermann, M. E. (2002). *Cool Comfort: America's Romance with Air-Conditioning*. Washington, DC: Smithsonian Institution Press.
- Argote, L. and McGrath, J. E. (1992). *Group Processes in Organizations: Continuity and Change*. Personal draft copy: Carnegie Mellon University. Pittsburgh, PA.
- Brown, S. A., Kelley, H., and Schwarz, A. (2006). Re-Searching Paradigmatic Extensions of Existing Theory: Special Issue. *Data Base for Advances in Information Systems*, 37(2 and 3), 8-13.
- Carr, N. G. (2003, May). IT Doesn't Matter. *Harvard Business Review*, R0305B, 1-11.
- Clarkson Centre. (1999). *Consensus Statement on the Stakeholder Model of the Corporation*. Retrieved 1 November 2007, from mgmt.utoronto.ca/~stake/Consensus.htm.
- Constable, G., and Sommerville R. (2003). *A century of innovation: twenty engineering achievements that transformed our lives*. Washington, DC: Joseph Henry Press.
- Costello, R. B. (Editor in Chief). (1995). *Webster's College Dictionary*. New York, NY: Random House.
- Denning, P. J., and Yaholkovsky, P. (2008). Getting to "We": Solidarity, not software, generates collaboration. *Communications of the ACM*, 51, 19-24.
- Freeman, R. E., Wicks, A. C., and Parmar, B. (2004). Stakeholder Theory and "The Corporate Objective Revisited." *Organization Science*, 15(3), 364-369.
- Jensen, M. C. (2000). Value Maximization and Stakeholder Theory. Retrieved 7 November 2007, from <http://hbswk.hbs.edu>.
- Mintzberg, H. (2007a). *Productivity Is Killing American Enterprise*. Retrieved 17 November 2007, from www.mintzberg.org.
- Mintzberg, H. (2007b). Productivity Is Killing American Enterprise. *Harvard Business Review*, 25.
- Murray, A. (2007). *Revolt in the Boardroom: The New Rules of Power in Corporate America*. New York, NY: Collins.
- Nonaka, I. (2007). The Knowledge-Creating Company. *Harvard Business Review*, 162-171.
- Porter, M., and Kramer, M. R. (2006). Strategy and Society: The Link Between Competitive Advantage and Corporate Social Responsibility. *Harvard Business Review*, December 2006, 78-92.
- Rockar, H. (2007a). *Being "Cool" and Being Productive*. Unpublished paper: Robert Morris University, Pittsburgh, PA.
- Rockar, H. (2007b). *Some Service Please!*. Unpublished paper: Robert Morris University, Pittsburgh, PA.
- Rockar, H. (2007c). *PTC: Information Technology Department*. Unpublished paper: Robert Morris University, Pittsburgh, PA.
- Rockar, H. (2008). Understanding the Colors of Collaboration in IT Organizations. Unpublished research proposal. Robert Morris University, Pittsburgh, PA.
- Simon, H. A. (1965). *Administrative Behavior: A Study of Decision-Making Process in Administrative Organization* (Second Edition). New York, NY: The Free Press.
- Snowden, D. F., and Boone, M. E. (2007). A Leader's Framework for Decision Making.

Harvard Business Review, November 2007, 69-76.

22. Unknown. (2003). The Dawning of the Age of Transparency. *Ubiquity*, 4(40), 1-6.