Media Richness Theory

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**PART 1**  

Media Richness

Media richness can be described as the ability of information to change understanding within a time interval. Communication transactions that can overcome different frames of reference or clarify ambiguous issues to change understanding in a timely manner are considered rich. Communications that require a long time to enable understanding or that cannot overcome different perspectives are lower in richness. In a sense, richness pertains to the learning capacity of a communication. Face-to-face meetings and use of the telephone are considered to have higher levels of media richness than written media, such as an interoffice memo or email. Additionally, use of synchronous media such as telephone and live chat sessions are considered to have higher levels of media richness than asynchronous media, interoffice memo or email.

**PART 2**  

Media Richness Theory

Media richness theory was introduced in 1984 by Richard L. Daft and Robert H. Lengel. It is used primarily to describe and evaluate communication mediums within organization in terms of there effectiveness. The goal of media richness theory is to provide managers a means of describing and later explaining communication challenges facing organizations, such as a lack of information required to perform a task at an expected level of performance (uncertainty), or mixed or conflicting interpretations about a particular task, objective, or goal (equivocality). Since it was first introduced, media richness theory has been a widely studied communication theory. Other communication scholars have tested the theory in order to improve it, and more recently media richness theory has been adapted to include new media communication mediums, such as improved video and online conferencing. Although media richness theory relates to media use, rather than media choice, the empirical studies of the theory have often studied what medium a manager would chose to communicate over, and not the effects of media use.
Daft and Lengel developed a four item scale measuring the level of media richness for various type of mediums that include face-to-face, telephone, written personal, written, formal, and numeric formal. Each medium is measured in terms of speed of feedback (immediacy), variety of channels (audio, visual), personalness of the source, and the richness and variety of language.

<table>
<thead>
<tr>
<th>Information Richness</th>
<th>Medium</th>
<th>Feedback</th>
<th>Channel</th>
<th>Source</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Face-to-Face</td>
<td>Immediate</td>
<td>Visual, Audio</td>
<td>Personal</td>
<td>Body, Natural</td>
</tr>
<tr>
<td></td>
<td>Telephone</td>
<td>Fast</td>
<td>Audio</td>
<td>Personal</td>
<td>Natural</td>
</tr>
<tr>
<td></td>
<td>Written, Personal</td>
<td>Slow</td>
<td>Limited</td>
<td>Personal</td>
<td>Natural</td>
</tr>
<tr>
<td></td>
<td>Written, Formal</td>
<td>Very Slow</td>
<td>Limited</td>
<td>Impersonal</td>
<td>Natural</td>
</tr>
<tr>
<td></td>
<td>Numeric, Formal</td>
<td>Very Slow</td>
<td>Limited</td>
<td>Impersonal</td>
<td>Numeric</td>
</tr>
</tbody>
</table>

"Characteristics of media that determine richness of information processed" (Daft and Lengel 1984)

Daft and Lengel considered Media Richness Theory as a prescriptive model, their original research suggests that high and low levels of media richness both have their own distinct advantages in terms of reducing either equivocality or uncertainty. Written or text based media that are low in media richness were preferred in situations where unambiguous data information needs to be exchanged. While a face-to-face environment, that is high in media richness, was preferred for messages containing information that may be unclear and open to multiple interpretations or being high in equivocality. For example, a simple message intended to arrange a meeting time and place could be communicated in a short email or text message, but a more detailed message about a person’s work performance and expectations would be better communicated through a face-to-face interaction. Rice and Shook suggest that media low in richness, such as business letters, convey less of a social presence and are less effective when bargaining, negotiation, and conflict resolution are required but may be preferable to as an efficient way to communicate pure facts and information.
PART 3

Evolution of Media Richness Theory

The initial studies of Media Richness Theory focused on exploring media use in individual jobs and matching information processing requirements to the task environment. These early studies focused on developing prescriptive theories, which were classified as best practices, but provided limited explanatory value or information about why individuals select particular media for a communication interchange.

The next generation of studies focused on the selection of media for individual communication interchange and the development of descriptive and explanatory theories to help us better understand how and why particular media are selected and used. During this period, research helped us understand the effects of media sensitive managers on media selection; the effects of routine versus non-routine tasks on media selection and use; and the influence of education, organizational tenure, sender / receiver orientation, or introversion / extroversion on media selection.

The research on individual communication interchange also produced mixed findings and lead to a shift in thinking about media selection and use from a rational actor perspective to one which is socially constructed (Social Influence Model). One example of this shift is the development of Structural Symbolic Interactionism Perspective that incorporates the idea that certain media can carry symbolic meaning that transcends the message or the richness of the media. One example is the formality of a type written letter versus an email or text message. Considering media selection and use as socially constructed, additional reasons for selecting a particular media include; situational factors; time and distance constraints; and symbolic considerations or the desire to convey authority (Trevino 1987).

The Social Influence Model considers social learning in terms of describing and explaining media selection and use within an organization. Social learning suggests that observing and modeling the behaviors, attitudes, and emotional reactions of others explains the selection and use of media. Schmitz and Fulk described the attitudes of agents as shaped by their work group, the ego network, and their supervisors’ perceived usefulness of a particular media as influencing media selection and use. Fulk also suggests that social influences on technology-related attitudes and behavior were consistently stronger when individuals were highly attracted to their work groups.
Initial research on media richness focused on individual job assignments and applied Rational Actor Theory to develop a set of prescriptive theories on how organizations should select media to reduce uncertainty and equivocality. During the second phase of research on media richness the analysis shifted toward individual communication interchanges and studies on media richness focused on describing and explaining the selection and use of lean and rich media with an organization. During this phase, the study of email as a communication media within organizations produced a set of mixed findings that lead toward the third phase or exploring media selection and use as socially constructed. Both the Social Influence Model and social learning were used to further explain the selection and use of media within organizations.
Unchartered Territories – Media Richness in Web 2.0 and Highly Immersive Virtual Worlds

The rapid diffusion of social media and highly immersive virtual worlds within and among: groups, teams, and organizations provides an opportunity to explore alternative levels of analysis such as communities of practice, public / private partnerships, and/or emergent disaster response teams. This diffusion of virtual environments, also suggests that the idea of media richness has changed along with the explanation as to why particular media will be selected and used. Several competing theories such as; Media Synchronicity Theory; Social Presence Theory; and Media Naturalness Theory provide us with insights into how the idea of media richness will be defined in the next decade and how media will be selected and used in emerging virtual environments such as social media..

Based upon the original research of Daft and Lengel’s work, Dennis and Valacich propose a new theory: the theory of media synchronicity, which looks beyond media richness theory. It considers more advanced electronic communication media that did not exist at the time of Daft and Lengel’s 1984 theory.

Dennis and Valacich define media synchronicity as “… the extent to which a communication environment encourages individuals to work together on the same activity, with the same information, at the same time; i.e. to have a shared focus.” In this way, it takes an outcome-centered approach often associated with emergent virtual teams and communities of practice, as opposed to the task-centered approach of media richness theory that was based on a well-defined and formalized set of organizational processes. To reach a group outcome, two primary processes: conveyance and convergence–of which every group communication process is composed–are necessary.

Conveyance refers to the exchange of information. In this process, participants do not all have to agree on the meaning of the information or even focus on the same information at the same time. Low media synchronicity is generally preferred for the conveyance process.

Convergence refers to the development of a shared meaning to information. In this process, all participants must work together to establish the same meaning for each bit of information. High media synchronicity is generally preferred for the convergence process.
In Social Presence Theory, William Short explained social presence as the salience of another person in a mediated environment. Others have extended this definition. Russo defines social presence as the degree to which a person is perceived to be real or co-present in a mediated environment. This theory asserts that the degree of social presence in a communications activity may have a number of different impacts on the participant’s perception, appreciation, participation, or level of satisfaction when working in teams and groups. Social presence theory suggests that “an affective communication medium has the appropriate social presence required for the level of interpersonal involvement required for a task”. Because of this, it is important to use richer communications media in situations where it is desirable to have the participants more strongly identify with each other. However, richer media sometimes bring with them certain constraints or problems that must be considered before they are used. These include increased time spent in the activity and sometimes a higher level of technology or support is required.

Media naturalness theory developed by Ned Kock builds on the human evolution literature and has been proposed as an alternative to media richness theory. Media naturalness theory argues that since our Stone Age hominid ancestors have communicated primarily face-to-face, evolutionary pressures have led to the development of a brain that is consequently designed for that form of communication. Other forms of communication are too recent and unlikely to have posed evolutionary pressures that could have shaped our brain in their direction. Using communication media that suppress key elements found in face-to-face communication, as many electronic communication media do, thus ends up posing cognitive obstacles to communication. This is particularly the case in the context of complex tasks (e.g., responding to emergent disasters such as Katrina and Hurricane Sandy, large systems integration efforts, and the transfer of complex tacit knowledge), because such tasks seem to require more intense communication over extended periods of time than simple tasks.

The face-to-face medium is presented as the medium enabling the highest possible level of communication naturalness, it is characterized by the following five key elements:

(1) a high degree of co-location, which would allow the individuals engaged in a communication interaction to see and hear each other;

(2) a high degree of synchronicity, (immediacy of feedback);

(3) the ability to convey and observe facial expressions;

(4) the ability to convey and observe body language; and

(5) the ability to convey and listen to speech.
Media naturalness theory predicts that any electronic communication medium allowing for the exchange of significantly less or more communicative stimuli per unit of time than the face-to-face medium will pose cognitive obstacles to communication. In other words, media naturalness theory places the face-to-face medium at the center of a one-dimensional scale of naturalness, where deviations to the left or right are associated with decreases in naturalness.

Electronic media that enable the exchange of significantly more communicative stimuli per unit of time than the face-to-face medium are classified by media naturalness theory as having a lower degree of naturalness than the face-to-face medium. As such, those media are predicted to be associated with higher cognitive effort; in this case due primarily to a phenomenon known as information overload, which is characterized by individuals having more communicative stimuli to process than they are able to.

**PART 5**

*Media Richness in Homeland Security Organizations*

With the increasing proliferation of virtual environments in Homeland Security organizations, we are confronted by new challenges pertaining to how such environments can be leveraged to promote and induce effective work performance. Following considerable diffusion of web-based collaborative environments and the advent of Web 2.0, Homeland Security organizations are working increasingly in virtual environments as well as—and in many cases instead of—their physical counterparts.

Within particular settings such as where tasks tend to be static and well defined virtual environments that are low in media richness can outperform face-to-face environments by providing efficient real-time access to expert knowledge and information that reduces uncertainty in the task environment. As an example; Law Enforcement officials effectively use information-sharing networks to obtain information about a particular event or suspected terrorist. Fire Service Captains successfully acquire information and expert evaluation of newly developed technologies using the "Responder Knowledge Base" when making procurement decisions.

During complex emergent events, such as during 911 or Hurricane Sandy, where shared situational awareness and common goals are yet well understood among responder communities the need for interpretation and negotiation is key to success. First responders can benefit more from media rich face-to-face environments or possibly highly immersive virtual environments that enable a greater shared and more accurate interpretation of the task environment. Along with face-to-face meetings, which are considered the gold standard of media richness, GIS overlays are often used by a range of first responder communities working together during and just after an emergent crisis to provide shared situational awareness and a common operating picture.
This calls into question what appears to be a strong assumption reflected in organizations: that physically distributed, media lean virtual environments that rely primarily on email and texting or chat for communication should be employed during times of crisis. In many cases the use of such media in such environments does not appear to gain an accuracy advantage. This suggests that leaders and policy makers may benefit by rethinking their organizational assumptions, particularly where accuracy is important.

Although much information is collected from distributed sources during times of crisis — and hence must be physically distributed by necessity — the analysis of such information does not have the same necessary cause for physically distributed work, and leaders and policy makers may find it useful to collocate analysts in physical environments that afford media-rich, face-to-face interactions. During an event such as Hurricane Sandy, distributed data collection via; “Tweets”, “YouTube” videos, email, and “Facebook” posts can provide Fusion Center Analysts and Incident Commanders with an invaluable source of information to enhance situational awareness. In some cases these same distributed feed, through the use of more sophisticated analytical tools, can be used to discover emerging patterns or trends that better inform response activities and the allocation of critical resources. In this example; data is collection through distributed lean and rich media and the analysis is performed in a facility were experts are co-located, meet face-to-face, and are better able to reduce equivocally during emerging complex events.

Homeland Security leaders are often challenged by decisions regarding which work activities to perform in virtual environments versus their physical counterparts based on the level of media richness. Unfortunately for Homeland Security leaders, our level of understanding in this area remains tentative and the idea of media richness continues to evolve as virtual environments become increasing immersive and we continue to explore the use these environments in HLS agencies. Media Richness Theory provides HLS leaders with both prescriptive and descriptive knowledge to inform problems related how media selection and use moderates the reduction of uncertainty and equivocality in varied task based environments.

Homeland Security professional are encouraged to critically evaluate the application of Media Richness Theory to their respective decision-making environments, to consider their own experiences, and to challenge the limits of all theories when applied to informing problems in Homeland Security. Keeping in mind that theories are: tentative, continually tested, adapt, and are sometimes extended or replaced by new theories as informed by our experiences.


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