

## Information Networks An Approach to Human Resource Networking

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### Abstract:

This paper highlights the structure and process of information networking as a means to achieve successive stages of development. They are viewed from the perspective of a causality relationship, from networking as a means, to development as an objective. In certain cases, this relationship might reflect a symmetric structural interaction. The following areas will limit our subject scope:

- a) Topology of networks and their role in the information flow.
- b) The human resource network and its variables.
- c) The electric enhancement of the networks.

**Keywords:** Human Resource, Informal Communication, Information Counselling

## **1- Introduction**

The developments and changes made by information technology in the business environment have changed the basis for the development and improvement of the status of enterprises, which has placed institutional attention on the application of technologies in the various functions that should make the most of what they offer to raise performance and keep abreast of technological events.

As human resource management is one of the most important functions of the institution because it is concerned with the most valuable resources based on the dependability of its work, it is forced to change and modernize the method of running these resources in line with the requirements of the times, it is forced to apply information technology in the management of human resource where it became an imperative and strategic weapon To meet the challenges of modernity so it is more important for the adoption of networks that facilitated and simplified the procedures of this post

## **2- Conceptual Background**

The term networking as defined by Webster's Dictionary means "an interconnected or interrelated chain, group or systems". This definition has been applied to any set of elements interrelated by tasks and objectives. The interrelation may be represented by technical devices, human nodes or institutional bodies, each within its appropriate context giving the concept of networking a different scope and characteristic.

Nowadays, there are probably as many definitions of the network as there are disciplines and activities in which the human being is involved. The word network has been used in more than a dozen fields including sociology, anthropology, psychology, administrative science, geography, city planning and communication engineering [1]. We frequently come across concepts like "Computer networks", "Telecommunication networks", "Bank networks", "Police networks", "Traffic Networks", "Intelligence networks", and so forth. They have a common link which can convert them into elements of an integrated network for information exchange. In all of them, information is a basic element for connectivity. The integrated network serves as a vehicle or channel by which information services and commodities are exchanged.

According to the function to which it has been applied, the information network has been defined in different ways:

"as a mechanism to inter-link service and systems to give information to users at any given point. It may be a physical network that includes tools for the transmission of information or a human network that links human resources for information transfer. Another source states that "The network is the institution of our time: an open system, a dissipative structure so richly coherent that it is in

constant flux, poised for reordering, capable of endless transformation” [2]. Furthermore, the network is seen as “a supra-system that is related to formal and informal service systems within a given geographical or functional service area [3].

Beside their functionality, information networks have been classified by types. “According to their topology, the subject area covered, or their geographical scope. A network’s topology may be of either the “Star” or the “Spider’s web” type. Its subject area may be of general, sectoral or specialized knowledge. In geographical scope, it can be local, national, regional or global” [4].

According to a functional background, the network may represent: (a) interpersonal relations; (b) group cooperation; (c) interagency networks and (d) electronic systems communication. The same nodes of individuals, groups, agencies and devices perform interactions which might be” (a) informal (specialists contacting each other for information); (b) semi-formal (specialists either contacting each other directly or turning to a network focal point for referral) and (c) formal (all transactions among individuals processed through a referral center)” (Dosa, s.d.).

## 2-1- Interpersonal Networks:

“Man in sociable by nature” according to Ibn Khaldun’s social theory upon which modern sociology is based. Anthropological research shows that man has always tended to live in communities. This implies that in the social environment the human being establishes all kinds of contacts with the surroundings to figure out how together they could contribute to each other’s resources. We say that individuals have developed within their small groups and that they use a number of individual relations to interact, and respond to their daily needs. In the course of a day, the volume of interactions of one person may expand or contract or remain constants.

Applications of human relationships, identified by historians and anthropologists as “sociability”, began to emerge after World War II under the concept of “Networks”. But rarely is the word used with precisions. It is often only a label reflecting the obvious fact that each individual has a wide range of relationships. We are usually unaware of the extend and usefulness of these relationships for information exchange until events force that awareness upon us.

Sociopsychologists have observed that each human being represents a unique set of biological and affective constituents which generate very particular emulations and require precise feed-back to match a personal need. Each person constitutes simultaneously a focal unit of a micronetwork and a secondary unit of another micronetwork with which he interacts. Sarason reports that this kind of network has often been called “An individual’s total network[1]. Individuals interact in such a way that they create a broader kind of network.

## **2-2- Group Networks:**

As a macroentity, a group network is the combination of smaller units which share common basic interests, communication means, geographic scope, beliefs and identity. Turk (1970) identified this topology of interaction between smaller networks in a MESH network on the basis that each covers only a part of a total network. uses the “size” argument to distinguish the concept of group network from a clique network where individuals are influenced in their relationships by the number of persons involved in the network. He reports that “a group is relatively a small number of individuals who share a sense of common identification and who are in direct face to face interaction. A clique may have the same qualities but often it does not”[5].

The importance of a group network resides in its role as a filter or reconditioner of individual values and behaviors, especially when the group network develops an open structure through which new ideas can come into the group from external resources. Rogers also cites Coleman who valorized the “Process of transformation which takes place within a system and which creates a set of output resources from a given set of input resources” as a fundamental procedure in community development. Information in this structure will be processed, refined and value added in conformity with the common needs.

## **2-3- Interagency Networks:**

“The concept of interagency field is based upon the observation that the interaction between two organizations is affected, in part at least, by the nature of the organizational pattern or network within which they find themselves”. In this sense, interagency or interorganisation networks could be viewed as an extension of individual and group networks which contribute to the efficiency of the parent network. In the same context Sarason suggested that “an organization, broadly defined is any activity of individuals with defined goals and identifiable criteria for membership” [1]. Even though the internal structure of the agency might rely upon formal ties and communication channels with external counterparts, individuals and groups contribute by their informal ways to shape the role of the agency as a member of a broader inter-agency network.

As in the interpersonal realm, interorganization networking resulted from an evolutionary process and form the growing complexity of society. As Emery and Trist (1965) noted, “Single organizations are facing the complexity of the unwieldy external environment by forming clusters with other organizations”. Although the benefits of cooperation and coordination are often undermined by agency autonomy, turf problems, and competition among interest groups each of whom tries to attract constituencies and obtain resources, organizational networks have demonstrated results during

recent decades in promoting more integrated services and overcoming duplication of efforts and waste of resources.

This is a very broad and oversimplified overview of the complex structure of networks. I intended to highlight the transcendental evolution of networking from the individual level to institutional relations. Whether it is a total network, a group or an individual-centered network, the term has been used to define structures built on a molecular principle of inclusion. Each cell acts autonomously in its internal structure (centralized or decentralized) but creates gateways and bilateral linkages to form a larger basis for cooperation. Like a molecule, all constituents perform the same function but as a whole, they perform quite a different task.

The study of networks covers a wide range of variables including the extent of a network in comparison to its structural scope; formal and informal interactions among its components; the extent to which it relies upon human or technological components; and its efficiency in having a multidirectional relationships with the environment. Of this set of inquiries, the focus of our interest is on the role of the human resource network in information sharing and flow. In the following, I will describe some of the factors affecting the network's efficiency, reliability and problems.

### **3- Human Resources Networks:**

A human resource network has been described by [6] as "The mutual support mode of sharing knowledge, observations, documentation, data or opinions by people who are well informed in a field, whether this field is their primary area of specialization or an avocation". The authors added that "information sharing is the process by which individuals act as information consumers as well as information providers". This definition implies that the major aspects of human networking are based upon the mastering of the field of knowledge (people who are well informed), information providing, its sharing and consuming by the members of the community.

Research carried out in different disciplines demonstrated that throughout a long period of interaction with the environment the human being developed different forms and attitudes in sharing information and goods. The human attribute of "sociability", mentioned above, created different forms of interaction identified as "kinship and social support networks, invisible colleges, learning networks, personal communication networks, diffusion networks and interagency networks". Within any of these human interrelations, individuals participate in more than one way. They may be suppliers and/or consumers of data and, they may be aware or unaware of sources and movements of information. Their belonging to a special group could be permanent or ephemeral. Their participation could be planned or spontaneous. Interreaction could take place in different modes: by the

snowballing or chain linking approach where relationships grow in an informal and unstructured way; or by the systematic approach where all activities are organized and planned. These approaches form the common denominators for the different human resources networks described above.

Among individuals, groups or organizations, the informal and formal ways of information exchange have been in constant flux. The effectiveness, and reliability of human resource networking are said to be affected by the following factors:

**a- Equity of access,** A useful way of looking at information distribution issue is to consider the balance of receiving information products by members of a community. Human societies have always been affected by ethical, political and administrative problems which result in the exclusion of some people. “Unless an information sharing arrangement benefits each participant, the network easily deteriorates” [7].

**b- Timeliness,**To paraphrase Ranganathan’s well-known principle, the information network must deliver the right information to the right user at the right time. Time nowadays is a critical factor in the decision making process. Not only delays in information delivery but also outdated information could have a negative effect on users.

**c- Accuracy and relevancy,** Human information networks obtain data from reliable and unreliable sources. Selecting appropriate information resource and identifying accurate sources for relevant information determine the efficiency of a network in information sharing.

**d- Configuration,** It has been observed that the more the communication flows are constrained, the more centralized the network becomes. “A decentralized network may actually be preferred by local human service agencies that are uniquely suited to engage special groups of clientele who may be hard to reach through more centralized systems” [3]. A simple measure of centralization (density) is connectivity which is measured as the percentage of possible links in a network that are found to exist.

A different conceptualization of the human network approach posits that if the human network is to become a reliable and efficient tool for information sharing, it must dispose of rules that overtly or covertly regulate its function. This assumption of informality gave birth to the theories of the invisible college and the information gatekeepers, based on the human being as the key protagonist in information flows.

### **3-1- Invisible Colleges:**

Cronin reports that the term “invisible college”, originating from historical times, was effectively introduced in the information science literature in 1961 [8].The invisible college is a control mechanism automatically thrown up by the scientific community to enable it to manage its affairs

effectively"[9]. He cites Crane who reported that "as a rule the members of an invisible college are individuals, geographically scattered and dominated by a few central figures". These two citations highlight the critical characteristics of the network called invisible college: Informal communication and intellectual influence of key members.

### **3-1-1- Informal Communication :**

Informal communication is believed to be the lifeblood of scientific progress although it is always depicted as a complicated social process due to its dependence on behavioral and psychological variables. Research has found that reports on data, documents, unpublished sources, and extensions information have always been circulated by informal means within a community or network. Social scientists emphasize the psychological climate of trust that informal relations built among the members of the community or network.

Informal communication, however, presents also some disadvantages described by Cronin as an elitist tendency, unstable and short-lived arrangements, resistant to institutionalization, expense of maintenance and dissemination of some useless information [9].

### **3-1-2- Elitism**

One of the points often discussed concerns the centralized structure of the invisible college. They reported that Price's findings "gave rise to the concern that in peer information exchange networks a few core scientists formed on elite group of communicators"[6]. However, they also referred to Ferguson's report that "in recent years, the perception of social networks as elitist, peer dominated scientific clubs, gave way to a vision of networks as constructive self-help tools for personal growth and community development at the grass-root level".

It is widely reported in the literature that psychological factors play a dominant role in networking because in every group leaders tend to influence or outright govern the processes. These "self-selected" patrons have, in fact, a kind of natural superiority in leadership skills. Their activity almost always escapes the control of rules or planning.

In case of the invisible college and other informal human networks, elitism is usually created by the "ego-individual" who influence the nature of linkages among all members; or by a core group of individuals who direct others by their dominant responsibility, resources or skills. This third type of elitism springs from a central organization in case of an interagency network. Price reports that "these are not just groups of people working on a similar field of science and communicating amongst each other in some informal fashion ... they are just the hierarchical elite resulting from an expectable inequality and numbering about the square root of the total population of people in that area of research front ... They automatically reinforce their exclusiveness only by their excellence

and by the overpowering effect of their contribution relative to that of the rest” [8]. There is also some evidence that any attempt to institutionalize these core “engines”, results in a decline of the effectiveness of communication. Mick explains this phenomenon by the fact that these cores “exchange information for recognition. If this procedure is institutionalized ... then the information receiver has less to pay for the information transmitted since the gatekeeper is under an obligation to provide it anyway” (Mick, 1981).

### **3-2- The Gatekeeper**

The concept of “gatekeeping” emerged in the sixties, based on Thomas Allen’s research model, in the form of an “informal linking role played by some individuals in organizations[6]. Gatekeepers are intermediaries or special communicators who are strong in informal information sharing and problem solving in cross disciplinary fields. As evidence, established by research, came to strengthen the informal role of intermediaries in organizations. It was proposed to create information centers in order to provide factual information for scientific research and development. If implemented, this proposal would have institutionalized the informal gatekeeping process. Other suggestions favored the information scientist to play the role of gatekeeper in an organization. These suggestions have not been realized either because a formally appointed information scientist would not always welcome the informal role. However, DosaFarid and Vasarhelyy (1989) argued that information scientists could act as informal communicators for the following reason :

- i. They “are boundary spanning individuals” whose interest in multi-disciplinary fields help them to respond to complex information inquiries.
- ii. The nature of their user oriented profession helps create a balance between public information needs, the protection of individual privacy, and the protection of proprietary information .
- iii. Their profession is oriented to new technologies that facilitate responses to specific information needs and uses.

### **3-3- Information Counselling**

Sometimes information counselling is referred to as information consulting or technical assistance. The meaning of “assistance”, explained by Levinson, refers to the user as the “information seeker in need of help or assistance from the service provider” [2]. To respond to users inquiries, the counselor or the information consultant is supposed to have “background information about the topic in order to determine entitlement or potential eligibility”.



Here again, the problem of professionalism emerges. If it is an information scientist who provides information counselling, will he be qualified to advise users on specialized data ? On the other hand, if he is a specialized researcher, will he have the skills to locate and select current and retrospective sources

Information counselling is “an interactive process by which an information specialist determines the optimal way to meet the information requirements and needs of individuals or organizations and assures follow-up in order to evaluate the effectiveness of assistance” (Dosa 1978). Although the new technologies are offering novel and promising ways for information retrieval, the complexity of information needs, resources and systems are also increasing. Furthermore, human advising based on perception and interpretation, could lead to valuable information sources that formal systems could not locate. Human counselling assisted by modern technologies would then be an ideal combination to identify and evaluate the information.

Nevertheless, some reservations have been voiced regarding situations where the role of an information counsellor could get problematic because of isolation from grass-root users or by lack of familiarity with the multidisciplinary fields where he is supposed to afford advice. In some cases, counselling could be converted into political persuasion or ideological bias. Currently, the network environment is shifting toward reliance on informal channels of communication is shifting toward reliance on informal channels of communication where information is less contaminated by external influences, but is also less protected from redundancy and irrelevancy.

#### **4- Human Based Development**

The first part of this paper leaned toward the theoretical approach to human networks that facilitate the flow of information among multiple points. Information, however, has been described as a means or a commodity. In the context of development, scientific and technological information (STI) has been posited as assistance to economic growth.

Development has been viewed as an infrastructural issue. But awareness of the need for coordinated structures is growing. Mahan notes that “without parallel development of not only documentation stores but also the necessary skills in information service development, date-base and data bank development and training, the simple availability of technical access is insufficient”. As Dosa observed “development, (...) implies not only a societal process but also an intensely personal involvement” (Dosa, 1985).

A large body of literature has described such phenomena as transborder data flow (TDF), trade relationships and technology transfer, but only recently has the human factor been added to the

whole panorama of “the information society”. In fact, the literature indicates that previous information policies missed the importance of the people at the grass-roots as consumers and producers of information.

At both the national or international levels, there has always existed a disequilibrium of “power” that imposes a one-way flow of information from the elite to the grass-roots and from industrialized countries to technologically developing countries.

What changes are required to introduce the participation of end-users in promoting information policies that serve development goals at all levels.

#### **4-1- Human Networks In Development Plans**

With the emergence of the “basic needs” policy in development planning, there has been more insistence on grass-roots participation in designing and implementing development projects. This was essentially due to the failure of “imposed” development policies which excluded local populations.

In a study of non-governmental agencies (NGOS) in Africa. Bratton reports that when development policies exclude local people from participation, “Community based organizations drew cohesion and legitimacy by building on existing forms of social organizations and adapting their procedures to traditional norms and reciprocity” [11].

This trend demonstrates that (a) grass-roots react negatively to development plans when they are excluded from the planning strategy and (b) cooperation among members of a community can arise from social groups other than the elite. Because there is an instinctive tendency to behave homogeneously within a group or network, and because the rate of cooperation depends on how official authorities, project designers and policy implementers see their tasks in relation to the basic needs of people. The linking process ideally includes information dissemination to all groups, and feed back from all groups.

In the context of the need for equity in information distribution, the following issues urge consideration upon us:

**(a) Trust :** An achievement of development project management to secure feedback from target population. “Without trust, local people in a technical aid project’s target area might perceive a data collector or an extension agent as an intruder” (Dosa, 1986). Bratton too, reports that “organizations invariably encounter internal social conflicts that arise when beyond kinship-based groups to encompass “strangers” (Bratton, 1990, p. 92). Informal relations and information sharing are envisioned as ways to create trust, understanding and interaction between management and local participants.

**(b) Education and training:** The role of education in developing countries should extend to the fostering of local skills and creativity. Traditional societies have developed their own cultural systems of survival and continuity, their own model of cooperation and information sharing. Then, if development goals are to be met, new structures and social processes introduced in an area should be based on existing structures and communication flows. Dosa reports that “Srinivasan suggested that unless a society provides organized information channels, access to opportunities will remain a haphazard matter favoring the educated who are better equipped than others to find out” (Dosa, S.D.). Education and training have the potential to link local needs to development goals by empowering local people to develop skills of participation.

**(c) Communication channels:** Many development projects have failed to reach their objectives for the simple reason that they failed to reach the cultural core of communities. The cause might be a lack of trust on the part of community people and the communication channels used by development projects which are not relevant to local culture such as technological intervention or non-relevant reading materials.

Development projects are mainly carried out in non privileged areas where high rates of illiteracy and low levels of education are registered. In some developing countries, the cultural structure inherited a very extensive oral tradition in communications. Some communities speak more than one language and are inhabited by more than one ethnic group. Under such circumstances an oral-based communication approach will have the effect of creating “bridging human networks” among subgroups, avoiding the elitism of the educated, and improving the quality and quantity of information needed for development. In project planning and implementation, “the need for appropriate information to meet the developing counties basic needs cannot be met using the large data-bases of the developed countries”[12].

#### 4-2- Human Networks And Information Technologies

The impact of new technologies on the human being environment is obvious. Specialists are practically preoccupied with the negative side effects of technological innovation on human behavior. A very intriguing question is “Do we, information professionals, in developing and industrialized countries, have the philosophical compass to guide the use of the technology before the technology begins to guide the development process?” [6].

This is legitimate and wide-spread reaction to technological development without guiding principles. If technological development in industrial countries raises questions about social responsibility, is it possible that LTDCs, in their evolutionary situation could predict the side-effects of technological

growth and create genuine models for their own situations ? What is the role of the human-based social and communication structures prevalent in the developing areas of the world ? How do networks emerge from a culture ?

The situation is very ambivalent. Models of development in industrial countries are still attractive for LTDs. Technology is still transferred mainly from the North to the South. Local elites are still biased towards technology and industrialization at any price, and, indeed, industrial growth is necessary for development. But the outcome of such policies must be reinforced by social planning, the increase of the social welfare of the populations, the enhancement of the quality of life and the development of local innovation capabilities.

A possible threat is the collapse of the role of the human being in participating in the choice, planning and using not only of the innovation but also its benefits: In information sharing networks, the technological inventions have been positive. But the impact of implementation on people remains to be determined. “Studies of scientific communication networks have been characterized by an emphasis upon interactions between communication techniques and stages in the innovation process” [12]

This is a very significant position if a synergy between human and technological resources is to be guaranteed. Human resource information sharing has long been effective. The new information technology sharing be a partner rather than a rival to human capabilities. But as Bartlett noticed : “The user interface must be responsive to human needs and not as in the past, demand the maximum intelligence and flexibility from the user in order to extract the most from technology.

## **5- Conclusion**

The history of human resources networks has been a pivotal interest of social research . Surrounded by unsolved policy issues, the benefits of networks have sometimes been “frozen”. All times, the human resource network emerges into the forefront of development and policy attention. At other times, networks are ignored as resources. Their structures implications consequences and problems have been viewed from many perspectives. This paper attempted to deal with only a few characteristic issues of networking. Much more investigation is needed in order to open up the entire panorama of the significant potential of this communication activity.

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