Information Systems for Decisions in Public Administration

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1. MOTIVE

Some questions I want to deal with are: Do we need to discuss MIS/DSS/EIS[1] again? Haven't we had enough of that? Hasn't it been proven that such efforts are useless? Are not executives, are not public managers in particular, different? Don't they rely on hunches and visions when they decide, more than on information?

My answer will be: Yes, it is useful and necessary to tackle EIS or MIS again. One reason is that our knowledge about the pre-conditions and specialities of executive behaviour is deeper, at least that the wisdom already contained in early publications (we think of Russell L. Ackoff and his article on Management Misinformation Systems, or of Herbert A. Simon and his book on Administrative Behaviour[2]) is wider spread. Another reason, of course, is that the situation of public administration today is very different from twenty years back when the MIS idea emerged; the challenges confronting our public sectors on the one hand and of technological progress on the other immediately come to our minds.

If we resist the fallacy that ,,new public administrations`` can be built by information systems, if we avoid approaches which are mainly technocratic, if we ÷ in other words ÷ take a realistic view and face the facts, then and under these conditions, I do think, EIS or MIS are worth to be dealt with again.

It might well be that the life cycle of MIS follows a pattern typical for many innovations:

- ÷ At first, most people are unbelieving
- ÷ after some time, however, and after the first reports of applications they become euphoric and nurse unreasonable expectations
- ÷ when they realize that expectations were too high, they turn away

- from that stage the innovative idea has to go through a valley of tears and frustration and irony
- and it is only then that a phase of ripe, realistic and constructive assessment begins.

2. THE ORIGIN AND HISTORY OF MIS

MIS was a child of an era around 1970, an era quite euphoric about the manageableness and controlability of things. Old buildings were torn down and replaced by modern constructions; small communities were integrated to larger ones in order to make them more effective and efficient. Public agencies were connected to computer centers, serving many clients; information systems were set up with the mission to look for gaps and ,,wrong`` priorities due to the traditional political process as an example of ,,primary orders``.

Today we know that MIS was not able to unhinge those primary orders. The old structures didn't look so bad, afterall. Many of the planning and information systems, intended to be ,,secondary systems`` aiming at changing primary orders, have been abandoned or their pretensions reduced because we didn't like their outcomes too much. In fact, we discovered the beauty of old buildings again, of cobblestone in the streets, and of small, easy to survey communities.

What happened to the MIS idea? It survived, despite of having been discredited quite a bit. Around 1980 the name DSS was preferred. The approaches concentrated, more or less, on computer support for routine decisions or on computer-supported operations research.

Around 1990 a revival of the MIS idea can be observed, based on the new features of information technology. The name some authors prefer, is EIS.

In the following, we shall keep to the term MIS. The term ,,manager`` in this paper is used for management of public administration as well as for management in public administration and does not distinguish between executive or lower levels of management.

3. MIS ÷ A NEW SITUATION?

Discussing MIS, at least three areas have a different feature today compared to the sixties and seventies:

- the conception of ,,public managers and information``
- the data supply
- the need for a public administration to be more sensitive to its environment and more productive at the same time.

3.1 The value of information

3.1.1 There is no rational decision in the sense of an objective rationality, at least for two reasons:

- to analyse a problem and to figure out the consequences of alternative action, requires time and money itself, and we should expect that decision-makers weigh out carefully their costs of more information with their benefits of a better decision. In other words: The extent to which a public manager is interested in MIS, reflects his/her goals and value system

- even exact information does not prevent dissenting preferences. In those cases, more important than information for public management is approval by the necessary majority in parliaments, commissions, boards and so on.

3.1.2 Intuition and instinct are important assets of managers besides skills and information. In fact, often there is a negative feed-back loop between the amount of information and the quality of the resulting decision. The decision-maker should not be distracted by too many details which is the clou of the advice, given by a british judge to his fellow judges, when they had do decide on a complicated patent case: ,,Gentlemen, let's not get into details, because if we would do so, we would not understand them.``

3.1.3 Primary orders have a high momentum and are not likely to be replaced by secondary order information systems alone. This holds true inside public administration where you find managers preferably communicating with persons whom they trust, as well as outside public administration where communication networks beetween government and interest groups remain significant, regardless of MIS.

3.1.4 The mere existence of information doesn't mean much; important are actors having an interest in this information. Mostly, it is the real life that keeps us on the trot, not information about reality. Often, a need of public action is perceived by some people (e.g. in our country the existing housing situation or the upcoming pension situation), however government does not think it necessary to take action or is not able to find a solution which is supported by its constituency.

3.1.5 The time capacity of public managers is restricted. One consequence is that very often information work can be postponed easier than dates, another that planning for public managers doesn't have the same priority as for the early MIS-concepts. Planning involves many ,,what if``-considerations and bargaining for consent with groups that might be affected. Quite often, however, all the trouble turns out to have been in vain because the reality moved in a direction different from the plans.

Usually public managers neither like to waste their time capacity by questioning the given state of affairs, although the early MIS approaches, too, emphasized to start from scratch. Experience often teaches that, doing

so would end up at a situation similar to the status quo anyway (e.g. in the German state of Hesse the newly elected government intended to demonstrate a shift of priorities notwithstanding the current budget but was able to re-allocate only one third of one percent of the budget), and that the disturbances of the groups concerned, here also, were in vain. A lesson again is that information becomes interesting for public managers when powerful actors support it, but not necessarily when it is merely delivered by MIS.

3.2 Data supply

Data supply has made a quantum jump in recent years, in terms of quantity and quality. Larger parts of public administration are computer-supported which means more data are stored electronically. A process of systematization of the information flow can be observed which will, as it has already, improve data reliability. Access to data on a worldwide scale via networks is a fact. Methods and software tools for data analysis and presentation are available.

At least two aspects of the present technological equipment of public administration are remarkable:

- An infrastructure of information systems is developing. Comparable to other infrastructures this means that fixed costs are relatively high, that marginal costs for a single query or analysis, however, are relatively low ÷ a situation which should stimulate the usage of computerized information.

- Work stations, networks, data base software, user surfaces and so on, allow information systems to represent the grown personalized communication structures much better than mainframes and even minicomputers in the past. This is giving the single organizational units or employees a much better opportunity to maintain and use ,,their`` data themselves, and it allows more functions besides routine work to enjoy computer assistance, e.g. public management functions. I want to stress, however, that utilization of information systems by public managers does not necessarily mean that they must work with keyboards and screens personally.

3.3 Needs for well-informed administrations

At the threshold of the nineties, public management is confronted with challenges pointing to a rising need for information. The headline is ,,growing demands, but shrinking capacities``. The calls on public administration are increasing considerably: Environmental protection, health and social services, financial aid for European countries, and for the Third World, high expenditures for interest on public debt, higher citizen expectations regarding public relations and participation, in several states a shrinking population which means more competition on the labour market between private enterprise and public administration while, at the same time and partly due to a ,,shift in values``, the employees on the average expect more attractive jobs, e.g. more self-determination and self-fulfillment.

The capacity of public administration goes down not only because of the population development mentioned, but for other reasons as well like declining weekly working hours and increasing time resources allocated to continuing education (,,lifelong learning``).

In such a situation, the need for high productivity and for shifting priorities, or the need for management information, is apparent ÷ at least for outside observers.

4. INTERIM RESULTS

What are the interim results we have reached so far? And what is the point of departure when it comes to designing information systems for the management of and the management in public administration? I would like to summarize this in five paragraphs.

4.1 Everyone is at every time optimally informed in the true sense of the term: The way someone uses or does not use information, reflects exactly the weight he or she is putting on his or her goal functions and restrictions. And the only way-out of this situation is by changing this very system of values, goals, restrictions, benefits and costs of information as they are perceived by the respective public managers.

There is another side of the coin, however: When you hear a manager claim that he is optimally informed, he might in fact be saying: I would have informed myself better, had I had a quicker, more precise and cheaper information system at my disposal. For: To admit that we are not well informed would put us in a situation of cognitive dissonance. Therefore, the claim to be well informed, sometimes might be, in reality, a white lie of public managers.

4.2 ,,Most organizations possess the knowledge to cure their ills; the rub is utilization.``[3] Simply to tell people that they should plan ahead and should coordinate and should look for information, is not enough.

4.3 Information is no raw material like crude oil, which is prospected for, discovered, brought to the surface, refined and then put to use by people who have been waiting for it. Information as such effects nothing. Information requires actors who have the will and the power to utilize it for action.

One lesson from this should be that effective management information systems are a consequence of effective leadership rather than a prerequisite, and another that informations ,,are more tractable than roles; participants are more likely to seek and use data which suit their preferences than to alter their behaviour automatically in response to`` information.[4] We must expect information systems to be part of the political game, otherwise they are sent off the field by the referees who are the executives because without them or even against them nothing goes.

4.4 Since objective information is extremely rare, at least in public affairs, many managers have a certain fear of formulas, algorithms and other forms used to condense, analyse or interprete data. Rather they prefer information on their desk of which they can be certain that it has been provided, evaluated and its emergence been influenced by people whom they trust. This experience of life was ment by McLuhan, of course, when he claimed ,,the medium is the message``. The lesson of this experience for designing information systems must be that we must avoid to destroy or replace grown communication structures by anonymous management information systems. Rather we must utilize those grown communication structures. Max Weber's idea of a bureaucracy ,,without respect of persons`` is a fiction, at least in our times. The communication networks of public managers are highly personalized, and so must be the supporting information systems. And, of course, an information system based on ,,personal`` computers should have a higher potential here than a MIS twenty years back with its dependence on centralized computers and staffs.

4.5 Promising seems to be an approach which is based on principles of the market economy, an approach which is characterized by demand and supply. It is by no means sufficient to concentrate on the supply side by building data bases and technical distribution systems. We must try to trigger the demand for information as well if progress in the utilization of information is to be expected. And, between demand and supply, we need, relying again on experiences in market economies, explicit efforts to information marketing from both sides: acquisition marketing and ,,sales`` marketing. Such an approach differs a lot from the original MIS concepts which had a planned-economy bias in so far as they planned what information people were supposed to use, not what they liked to use.

5. DESIGN OF INFORMATION SYSTEMS FOR PUBLIC MANAGERS

The clou of these interim results seems to be

- that it is worthwhile to improve the information support of public managers because of an information technology which is not only more powerful and cheaper but also better suitable to the existing personalized communication networks so that a widening of the frame, set up by restrictions and goal functions, indeed is to be expected

- that we must go beyond the former concentration on supplying information by MIS and try to raise the demand for management information

- and that we must be prepared to meet such growing demand by valuable, quick and low-priced information.

5.1 Promotion of intrapreneurship

How can the demand for management information be influenced? The rationale of my answer to this question has been described perfectly by Saint

Exupéry already. The poet used the following metaphor: When you plan to build a ship, one way of realization is to hire people and to tell them how they have been organized, what jobs they have to do, what instruments to use at what time, and so far. The better way, however, is to make these people longing for the sea.

Are there ways to raise the desire for information in public managers? This is the crucial question because: Where there is a will there is a way ÷ if public managers want information, they will get it. I think there are two ways worth looking at, one inside public administration, the other outside.

5.1.1 Inside public agencies, a new emphasis on organization is expected for the nineties, an emphasis which takes advantage of one remarkable potential of modern information technology, namely to facilitate the re-integration of tasks which in the past have been separated and charged to several agencies or employees. The reason lies in the fact that electronic networks not only make data transferable from one location to another but also tasks. Division of labour is, among other reasons, based on the access to data. And when information technology enhances the accessability of data, certain jobs or functions become candidates for re-integration. Present day examples are not only clerical functions as in registries, post agencies and secretariates, but also administrative functions as budgeting, accounting, organization, personnel, computing, statistics etc., as well as professional functions. There seems to emerge a tendency to widen the task descriptions of organizational units and employees not only horizontally (by job enlargement) but also vertically (by job enrichment and more delegation of authority).

This potential is needed badly in the nineties. We feel very intensively that in our complex and dynamic world it has become more and more impossible to direct and control the various sectors of life with centralistic measures. Central steering capacities soon become overcharged; pathologic consequences for the institutions, like inflexibility, irresponsibility and inhumanity, are likely to follow. We feel also that we must rely more on human beings with their capabilities of phantasy, creativity, flexibility and sensitivity, and therefore must decartelize and decentralize our organizational hierarchies. The tendency is from organizations based on distrust and suspicion to organizations based on trust and confidence.

Not only do we feel that such a shift of organizational concepts is necessary: We are witnesses of dramatic changes of this kind ÷ from the collapse of centrally planned economies on the one hand to ,,production islands`` in automobile factories on the other, where the employees are given a much higher degree of self-determination than in centrally planned assembly-line work. Such new organizational concepts not only are apt to bring effectiveness and efficiency of public administration to higher levels; they also seem to meet the expectations of many in the labour force: The so-called ,,shift in values`` which has been observed mainly during the seventies and eighties, apparently calls for more autonomy and room for self-

development in the public service, and the higher educational standard of today's employees promotes those developments.

In more detail, those organizational measures could result in flatter hierarchies with horizontally and vertically enlarged work loads of organizational units and positions, concentrated on a few and explicitly stated missions, units with a high degree of authority delegated to the employees, an authority extended also upon personal, financial, technical and data resources which today normally have to be applied for by the agencies and which then (possibly) are granted to them by acts of special central units.

A term used for such organizational units with more competence and authority is ,,responsibility center``, another: field of activity with more self-sufficiency. Whatever the tag, such concepts of decartelization are able to nourish ,,intrapreneurship`` in public administration, a term coined by John Naisbitt, meaning an intrapreneur-like behaviour of employees inside firms or bureaucracies.

One would expect ,,intrapreneurs`` in responsibility centers to express a relatively high demand for information ÷ one of the prerequisites we mentioned earlier for improving information systems for public management. Personal interest of public managers in information is supposed to rise

- ÷ because responsibilty units are best controlled by critical success factors
- ÷ because they lend themselves more to goal-oriented than to process-oriented control
- ÷ which also relieves the managers of too much detail and allows them to concentrate on leadership
- ÷ because there will emerge a certain climate of competition which, more than today, requires of those centers to get actively engaged in public relations and statements of accounts.

Favourable for raising the demand for information should be that the various centers themselves, at least to a certain extent and notwithstanding defined connections to other fields of activities, control the data which are important to them. This way, each center or field of activity becomes the custodian of its data which will lead to enhancing their quality as well as the knowledge of public managers about their data. Thus, a positive feed-back between maintenance and usefulness of the datapools is to be expected. And, another important feature, self-learning from successes and failures in the past by public managers is promoted when data in an agency are not kept publicly but are to a certain extent concealed in ,,information circulations`` (analogous to blood circulations). It is obvious that the technological progress of recent years with desktops, networks, easy to

handle user-surfaces and the like, has greatly enhanced the realization of such organizational concepts of decartelization.

5.1.2 In addition to such measures inside bureaucracy it seems to be necessary to establish or to strengthen institutions outside public administration, dealing with information not taken into account by politicians and public managers. Since the view of each public agency necessarily is biased and selective, one could think of more or less independent institutions which are given the task to state and forecast consequences of governmental action or non-action.

5.2 User-support and general framework

While it is of utmost importance to let public managers themselves shape ,,their`` databases and utilize them through ,,their`` staff members, also an emphasis on ,,institution building`` is necessary in two respects: User-support and general framework.

5.2.1 The more autonomous the various organizational units are supposed to act, the more they need an effective user-service. It's task is to be at hand with professional and instant advice whenever the line units have a problem. Such user-support requires dedicated organizational units with sufficient, qualified and trustworthy staff. Their rationale must be ,,help to self-help``. Among their tasks is information marketing in the sense of providing overviews of available data and of demonstrating the usefulness of information to public managers over and over again.

5.2.2 More autonomy of responsibility centers is not be mixed up with chaos in public administration. Therefore, another type of institution building is important. It's function is to integrate the parts, and it's rationale ,,the principle of subsidiarity``. Two fields of activity are:

- to bring order into the technical infrastructure of an agency (a capable, compatible, fail-proof, user-friendly equipment, supporting the idea of re-integrating MIS into the line units must be made available)

- to bring order into the informational infrastructure of an agency (data models, data description, data integrity, and software for analysis and presentation are important topics).

Here, too, dedicated units with adequate staffing are indispensable. The addressees of these framework units are the public managers on the respective level who release suggested standards and regulations.

6. CONCLUSION

Technical progress in recent years, mainly desk-oriented computers tied into networks, has provided for better pre-conditions to match traditional, grown communication patterns of executives (the primary order) with electronic information systems (as secondary orders aiming at changing primary orders). This means that information technology today has a better

chance to become useful for public managers, whereas until recently those typical features of leadership behaviour like: little structure, acting under uncertainty, strong strategic and tactical components, and highly personalized communication structures, did lend themselves to computer support only to a much lesser extent.

This new opportunity can be utilized to raise the interest of public managers in information by letting them shape ,,their`` data bases in accordance with their view of the world and by letting them utilize the system through their usual staff. In other words: Modern information technology allows to re-integrate information systems into the line units of public administration which means more useful and personally interesting information for public managers instead of ,,objective``-rational MIS and which means strengthening the line and not side-hierarchies maintaining MIS. This approach must be supported by efforts of institution building for professional user support and for general regulations.

Such a combination of technical, organizational, and personnel approaches should be able to change the public manager's subjective appraisal of benefits and costs of information, and consequently a revival of information systems for management should be expected.

LITERATURE

Ackoff 1967, Russell L. Ackoff, Management Misinformation Systems, in: Management Science, December 1967, p. 147 to 157.

Simon 1947, Herbert A. Simon, Administrative Behaviour, New York 1947.

Bennis 1969, Warren G. Bennis, Theory and Method in Applying Behavioural Science to Planned Organizational Change, in: W.G. Bennis, K.D. Benne and R. Chin (eds.), The Planning of Change, 2nd. edition, London 1969.

Kovacs und Straub 1988, Péter Kovacs und Elek Straub (Hrsg.), Governmental and Municipal Information Systems, Amsterdam u.a. 1988.

Schick 1969, Allan Schick, The Road to PPB: The Stages of Budget Reform, in: J.W. Davis (ed.), Politics, Programs, and Budgets, Englewood Cliffs, N.J. 1969.

Traunmüller 1991, Roland Traunmüller, Führungsrelevante Informatikkonzepte: Informationstechnische Aspekte, in: Heinrich Reinermann (Hrsg.), Führung und Information, Heidelberg 1991.

REFERENCES

[1] = Management Information Systems, Decision Support Systems, Executive Information Systems.

[2] Ackoff 1967 and Simon 1947.

[3] Bennis 1969, p. 77.

[4] Schick 1969, p. 227.