Strategic Information Systems Planning: Perspectives on the Role of the ‘End-user’ Revisited

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Discussions on the formulation and implementation of strategic information systems and associated planning (SISP) has focused attention on the importance of the utilisation of ‘end-users’ of technology in organisations. This paper argues that the planning process itself tends to utilise approaches which support the envisionment of an organisation strategy but without encouraging the complimentary contribution of enabling key information and technology users to share the planned vision, or play a key part in its formulation. The focus of this paper is a study of those involved in ‘end-user computing’ (EUC), noted to be growing both in physical numbers and importance, who attempt to exploit technology for strategic purposes. Empirical evidence is presented which is related to concepts associated with the ‘stages of growth model’ to illustrate the opportunities and constraints of linking end-user activity to the strategic planning of information systems and technology (IS/IT).

A number of studies demonstrate that information systems and technology (IS/IT) applications within organisations have failed to deliver promised benefits (Hochstrasser, 1994; Willcocks, 1994; Murray & Dhillon, 1996). Indeed, there remains a relative mismatch between some of the theory and the sobriety of after-the-event analysis of practical benefits (Dhillon & Backhouse, 1996). It is also commonly argued that relative failures are due to the fact that technological application is not seen strategically enough by organisations (Ciborra, 1991; Galliers et al, 1995). In addition, users of IS/IT have for a number of years been increasingly less willing to be chauffeured by technically skilled support staff and have emerged as a key force (Culnan, 1983). It is also commonly suggested that it is the perceived dissatisfaction with delays and the inflexibility of the traditional IS department that has resulted in the emergence of end-user computing, a view confirmed by the empirical findings of this study. Chou (1996) notes that there is a clear and well identified movement from the former centralised systems prevalent in the 1980’s towards more individual and integrated management orientated systems. This will ultimately enable the exercise of greater control by users over technology based data and information resources. It is, therefore, important to consider the end-user influences and to make observations on their contribution to the strategic exploitation of IS/IT.

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This paper seeks to interpret the importance attached to the role of end-users in strategic information systems planning (SISP). It argues that although organisations have begun to see the benefits of linking IS/IT planning to business strategy (Earl, 1989; Currie, 1995) they have fallen short of considering end-user perspectives in the IS/IT planning process. The research presented in this paper adopts aspects of Nolan’s stages of growth framework (Nolan, 1979). This is justified through the extensive adoption of Nolan’s concepts over recent years and most importantly its inclusion within the theoretical perspectives of the ‘critical success factors’ approach (Bullen & Rockart, 1981) and ‘strategic grid’ (McFarland & McKenny, 1983) which are widely applied as mechanisms for determining the extent of the development and exploitation of strategic organisational IS/IT applications. The stages of growth have also been used to collect empirical evidence and draw interpretations. The paper is organised into five sections. Following the introduction, various aspects of the stages of growth model for end-user computing are evaluated; the empirical evidence is presented in section three; this is followed by the analysis and discussion of the findings; finally conclusions and future research directions are presented.

Stages of Growth Theories

The term end-user has generated much debate in recent years and is commonly regarded as an over used, perhaps derogatory expression, for non-IS/IT specialists. It was originally coined to refer to people outside centralised IT departments who act on the information provided to them from corporate systems. An end-user is considered to be someone who is involved in the development and operation of any computing activities which would suggest that everyone is an end-user. Alavi (1985) gives a more specific definition of an end-user by suggesting that it is someone who creates the software specifications necessary to affect the computing itself. Typically an end-user is a middle manager who has little specialist training and is semi-skilled in the use of electronic information systems and technology. Significantly, end-users often have to adopt organisational planning techniques that would help them in meeting their perceived information needs. This has led to a number of ‘distinct methodologies’ where users are encouraged to intervene in the design of the systems for their benefit. Examples include, ETHICS (Mumford & Weir, 1979), Socio-Technical Systems (Pava, 1983) and more recently, the proliferation of Soft Systems Methodologies associated most closely with the profound and original work of Checkland (1981) and Checkland & Scholes, (1990).

Evidence suggests that increasingly users have been having a more direct involvement in the adoption, use and management of technologies. The direct involvement of users may be at three levels: simple command level manipulation of software, non-professionals becoming de facto experts in their own area and programming professionals writing software for others. Benjamin (1982) predicted that by 1990 end-user computing would consume 75% of the corporate computing resource. More recently Wastell and Sewards (1995) note that, at least in the manufacturing sector, by the year 2000, end-user computing is expected to increase to 40% of total IS/IT development. It appears that the end-user will continue to be a significant potential influence behind new IS/IT innovations in organisations.

To what extent, therefore, is the end-user of IS/IT an important influence for successful strategic IS developments and on-going enhancements? The proximity of an end-user and their intricate knowledge of information domains and associated work tasks, along with the increasing awareness of the potential (and limitations) of IS/IT, makes them an important and powerful group for further study. As early as 1974, based on empirical observations from within large user organisations, Gibson & Nolan (1974) constructed a ‘maturity’ model. The original stages of growth model was later expanded from four to six stages by Nolan (1979) and included categories relating to, initiation, contagion, control, integration, data administration and maturity. While the model has by no means been accepted without question, despite its general appeal (Benbasat et al 1984), it is often seen as having some general analytical and heuristic value. Stages of growth theories continue, however, to evoke speculation and detailed academic analysis (Huff et al, 1988; Li & Rogers, 1991; Jayasuriya, 1993; Friedman, 1994; Wastell & Sewards, 1995).

The stages of growth model did not predict the proliferation of IS/IT now increasingly available to middle managers. For instance, desktop client/server, which are often more powerful than central mainframes; e-mail and cooperative software which enable soft data handling internal and external to the organisation; internet and web services, which make vast and varied data sources available. More recent stages of growth models (Galliers 1991; Galliers & Sutherland, 1991) do reflect better the movement away from the conceptualisation of technology as broadly database technology. In these models, there is a key role for IS/IT users where the interaction between the increasingly business oriented IS function and skilled end-users becomes critical. In addition, other models such as the three era model (Ward & Griffiths, 1996; Somogyi & Galliers 1987; Wiseman, 1985) also have complimentary perspectives.

The stages of growth model helps to establish a link between the perspectives of the end-users and the IS/IT planning process. The inherent assumption is that the existing technology and the knowledge to apply it, at an individual and organisational level, determines the systematic position of the user in the IS/IT planning process itself. It is useful to consider the ‘eclectic’ nature of this situation where a combination of both a centralised system and a number of distributed smaller (end-user) systems are established within an organisation. Sullivan (1985) proposed such a model which included elements of Critical Success Factor (CSF) method-
ologies (Bullen & Rockart, 1981) for decentralised systems design and Business Systems Planning (IBM, 1981) approaches for more centralised systems both of which emerge from a stages of growth model (S of G). The complexity of IS/IT planning is that organisations often seek to enhance their systems from both of these fronts at once resulting in problems of choice (Gunton, 1988). Therefore, they need to balance these commonly opposing forces and to move to a position of ‘maturity’ for systems design and management, as in Figure 1.

The primary benefit of the stages of growth model, therefore, in its original form and its extensions, (Galliers & Sutherland 1991) is to give advice in managing the evolution process that balances the two main organisational forces of centralised and decentralised systems. Organisational control is necessary which relates to the efficient use of new technology within an organisation, while sufficient slack is required to provide for effectiveness (invariable related to so called loose/tight structures, or Earl’s, 1989, ‘multiple’ methodology). It is the interplay between control and slack which suggests the importance of linking end-users to the management of the IS/IT application development process. The essential need is to analyse the extent of this interplay, through the stage of growth model, where an organisation emerges as a sophisticated user of IS/IT for strategic planning. The next section presents results of an empirical study which considered these relationships and the outcomes which resulted.

Field Work

The objective of the data collection exercise (Appendix) was to consider the extent of end-user integration into the organisational planning process for the exploitation of IS/IT. Empirical evidence was collected to answer the central question of how end-users see their role in such processes. The field work involved 51 end-user managers who were selected on the following criteria:

- they used information as a key part of their work
- they used technology is some aspect of their work
- they were not employed in an IS/IT role directly
- they used multi-user systems as well as PC applications

The managers were seen as key users of information who contribute significantly to their organisations strategy process and mediate between ‘what is’ and ‘what should be’ (Nonaka 1991). Each of the managers filled in a questionnaire, seven were interviewed for more qualitative analysis and two focus groups were subsequently organised. Further, in a number of cases, the IS/IT section head or representative was also contacted to obtain their perspective.

The aim of the research was as follows:

- to determine the learning environment in which these staff worked, as well as their relationship with central IS/IT services where they existed.
- to analyse the structure of end-user work activity and the subsequent role played by IS/IT
- to analyse end-user views on centrally applied IS/IT applications, and make an assessment of the level of input into the strategic planning and development process.

The questionnaire, therefore, considered the role of end-users within their organisation and their perspectives on IS/IT for strategic planning. The interviews cross referenced the same questions to another questionnaire which assessed the organisation in which they worked onto the stages of growth model (Nolan, 1979). The focus groups were used to verify a number of key observations. Comparative perspectives were also gained, as noted, in a small number of cases by contacting key personnel from central IS functions.

The sample respondents were managers from several large manufacturing companies, the health sector, water companies, local authorities, postal services, employment services, magistrates courts, police service and a number of SME’s (defined as <100 employees) in the North of England, UK. The data is presented through a series of descriptive statistics and supportive narrative of responses. They were asked to assess their own backgrounds and role in the organisation where 70.5% saw themselves as either middle management, 11% as senior administrators and 14% as senior management. The sample respondents were also asked to give their length of service in current position (x = 38.0 months, s = 47.4 months) and in order to help gauge their awareness of other sections of the organisation this was compared to the length of service in total in the organisation (x = 83.9 months, s = 78.3 months). A number of the managers (65%) had some training in IS/IT which was virtually entirely skills training in software packages with an average of six and a half years of developing and implementing applications (x = 78.3, s = 57.9 months).

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Decentralised

CSF eclectic’

S of G BSP

Centralised

Figure 1: ‘Eclectic’ Methodologies adapted from Sullivan (1985)
i. Perceptions on multi-user systems

The end-users were asked about their views on centrally provided (bespoke or packaged) IS/IT applications and whether they felt these inhibited the organisation of work and work tasks. In total, 58% of the managers indicated that these centrally provided systems were not particularly beneficial. This may be seen as a significantly high figure, which was subsequently qualified in the two focus groups. Findings pertaining to the centrally developed IT systems are summarised as follows.

In both of the focus groups, the managers suggested that IS/IT had demanded significant investment with little (perceived) advantage. This was embodied in a series of criticisms where this theme dominated the meetings. The references to the failure of IS/IT were too numerous to count in a discreet way. This was not a rational evaluation of the relative ineffectiveness of centrally developed and supported IS/IT systems for the participants’ relevant organisation sections and functions. The frustrations expressed were wide and varied, and some classic poor information issues arose. Indeed, accounts were made, for example:

- of misunderstanding information provided; information which was not in the appropriate form for the perceived task
- needs for information which were not available
- data on separate ‘incompatible’ systems being duplicated
- end-users ‘doing their own development’ because of the failure of the central IT section to meet the perceived information need
- investments that needed to be aborted prior to implementation
- the problems of data integrity; that enhancements were slow, delayed or not possible for a range of reasons.

The general perception among the managers was that IS/IT had not delivered expected advantage. Indeed, one manager from a large manufacturing corporate suggested that the technology in his organisation should be thrown away ‘...because we would be more efficient without it.’

The focus groups expressed comparable concerns including, most significantly, one manager from a local authority who claimed that his section ignored the centrally designed systems and were currently building a separate computer network and database type system because ‘everything they (IT services) produce is a waste of time...’ These findings are seen to compliment some of the IS literatures (Hochstrasser & Griffiths, 1991; Hochstrasser, 1994; Hackney, 1994, 1996) and demonstrate the continued under performance of central IS functions to meet perceived end-user organisational information needs.

ii. Individual and organisation learning

The questionnaire also sought to establish insights into the way the sample end-user respondents handled particular technology problems or difficulties from planning to implementation. A high percentage of managers (42.5%) indicated that such an occurrence happened quite often. The respondents on this occasion also shared the issues of IS/IT problems with central IT staff (43.6%). However, the same issues were not generally shared with line managers where a large number (68.5%) indicated that they never been consulted on such issues. The focus groups confirmed that while perceived technical issues were directed towards the central IT section, only fundamental (information oriented) problems were reported upward to line managers.

Complimenting these findings were aspects of the value of learning by the managers where, as noted, some 64.7% had received some sort of IS/IT training. When asked what this ‘training’ entailed, 92.2% described short courses in handling software packages and 16.8% described computer programming. 39.2% had attended some sort of IT training in the previous year. These results suggested that technology has a strong priority. Of the 70.5% who had a personal development plan, 45.0% said that it included some aspect of IS/IT. However, this type of training and development was very much oriented towards IT skills and not information evaluation. It was seen as training to enable personnel to utilise existing technology and not in the evaluation of its performance within the context of organisational strategic planning. Significantly, therefore, this approach did not allow end-user managers to make a contribution to the IS/IT planning or development process. Individual skills learning was encouraged but organisation learning, through potentially higher performance, did not benefit from such an approach. Clearly, the lack of involvement by line managers where IS/IT issues and concerns were not being communicated exacerbated this situation.

The focus groups further developed this theme on the contribution of end-users to systems application designs particularly in the planning process. A number of managers expressed that when they had attended briefings regarding systems applications and developments, they were not consulted in the organisational IS/IT planning process. Indeed, the perception of the respondents was that the planning process was undertaken prior to such presentations, and was seen by respondents as an information dissemination exercise rather than an invitation to contribute to the planning debate. There was also a general perception in other areas of the IS/IT development process. A small number of managers expressed that they had actively played a part in some element of systems development work. The activities undertaken, noted by the managers included designing reports or user interfaces. Again, this involvement was quite minimal and both focus groups suggested a strong disenfranchisement from the whole organisational planning process generally.

Differences in approach were also gained from key IS/
IT department heads or representatives and their responses compared with end-users perceptions of involvement. It was noted that the end-users in these cases were seen as doing the bulk of the planning and requirement definition, and a substantial part of the feasibility study, report and screen designs. However, they had considerably less involved in the systems analysis and design stages. The differing perceptions between end-user and the IT staff clearly questions the validity of who is, and should be, involved in planning processes. In particular, is there any benefit in trying to include a wider user perspective where perceptions may be too ephemeral for the technology and associated planning procedures to cope with?

iii. The structure and regularity of tasks

The objective of looking at the structure and regularity of managerial tasks was to determine the perceptions of end-user context and to assess the level of change in key roles according to their business environment and understandings of information requirements. The focus of this analysis was on task structure and information flow as depicted primarily on data flow diagrams and role activity diagrams. This was to consider the relative user perceptions of success of centrally designed IS/IT as related to the regularity of key tasks normally undertaken by end-users. These perceptions, and the level of associated change, are often omitted during systems design procedures (Buchanan & Boddy, 1992). This premise is built upon the notion that IS/IT, as an organisational resource, requires human creativity to be responsive to changing organisational need (Zuboff, 1988).

The end-user was asked to select one key repetitive and discrete task that they undertook regularly. The word ‘task’ can be seen at a very high and general level or at a lower procedural type of level. Seventy percent chose tasks that were undertaken more than twice a week, 94 percent saw information as central to the task and 92 percent utilised a computer (PC or centrally designed system) to perform the task. The reasons for using a computer for the task were speed (88%) and accuracy of results (76.7%). Sharing information was less of a priority (62.7%). The questionnaire did not attempt to gain insight into user conceptualisation of information (as opposed to technology) as such, though the levels of change for what initially seemed as regular work was of key interest. For instance, 52.1 percent indicated that the activity changed in some manner every time they undertook it. For example, 44.6 percent felt that the data sources ‘changed regularly,’ and 39.1 percent suggested that the user of the information ‘changed regularly.’ Seven respondents were questioned further about the levels of change in key tasks. The approach taken was purposefully reductive rather than expansive to reflect the more prescriptive interpretations of data flow diagrams and role activity diagrams. The focus of attention was on the following:

- the regularity of repeating tasks
- within key tasks, the stability and regularity of information sources and destinations
- the degree to which there was different or remedial action taken each time the task was undertaken

While there are many activities that are basically routine and repetitive in nature, the respondents demonstrated that there are also huge areas of variance. Changing circumstances meant that different tasks were often prioritised. Sources, destinations and purpose of information also varied quite significantly. Most activities were perceived to be quite ad hoc, and much of the decision making was rather intuitive. Even within tasks, that on the surface seemed repetitive, there were many variants which necessitated taking other types of action. Clearly, in identifying the order of the changeable work activities of the managers to any level of detail is achievable at most as a snapshot in time.

There were also examples of where key tasks were ‘picked up’ and put down according to changing perceptions of activity responsibilities. It became obvious that end-users roles, as expressed in activities, cannot easily be designed by managers into IS/IT processes which support organisational planning. Notions of understanding particular task structures are only available, as noted, as a version of reality at one moment in time. This is an empirical finding at variance with the IS/IT planning literature where seeking regularity is commonly over-simplified.

Discussion and Critique

The mainstream IS/IT literature identifies a number of factors and documented influences (Ward & Griffiths, 1996) on the effectiveness of exploiting IS/IT in organisations, i.e.:

- the capabilities of the technology
- the economics of using the technology
- the applications which are feasible
- the skills and abilities available to develop the applications
- the pressures on the particular organisation or its industry to improve performance
- the ability of the organisation to make appropriate judgments about the deployment of IS/IT and the associated resources

Whilst these general principles are appropriate they clearly have limitations as explanations and approaches to IS/IT planning. The empirical evidence in this paper questions the extent to which central IS/IT departments and middle management users have so far come together as related in the later stages of growth theories. If the theory has some value, then it might be argued that the respondents to this research might be at best seen at the earlier stages of growth where end-user computing remained mainly uncoordinated. The factors promoted through the IS/IT literature have commonly resulted in an oversimplification of the linearity towards the maturity phase within the model.
For example, the success of a business system is based on sets of criteria which are based on strategically oriented measures, i.e.:

- critical success factors
- current position in a growth stage model
- strategic grid analysis

These techniques remain of key importance to the formal planning process. Without them planning is lacking, even if the plans have some fundamental flaws, they nevertheless provide some form of direction. Weick (1990) recounts an analogous and rather humorous story about a group of Hungarian soldiers lost in the Alps. After two days, the soldiers had given up hope, and assumed that they were to die, when suddenly one of the soldiers found a map in his pocket. With confidence, they subsequently marched down and out of the mountains to a relatively nearby town. After finding safety, they realised that the map was of the Pyrenees. The point of this was to demonstrate how strategy is mainly an 'ad-hoc' activity the outcome of which 'emerges' over time rather than a prescription of a definite method of achieving a vision (Mintzberg, 1987; Grant, 1991). More recently Peppard (1996), while considering serendipity in business strategy creation, identify the challenges for IS/IT planning which relate to the management of benefits, evaluation of business change and determining organisational competencies. The strategic plan is therefore a way for the manager to act with some confidence through an interactive, ongoing process of reading the business environment and assessing stakeholder expectations. This assertion is supported by the empirical evidence presented in this paper.

Whittington (1993) usefully categorises corporate strategy into four approaches, as 'classical', 'evolutionary', 'processual' and 'systemic'. The classical view of strategy assumes a rational planning approach still dominant in some parts of the literature (Ansoff, 1965, 1991; Porter, 1980, 1985). In addition, much of the IS strategy literature focuses on models which rationalises the strategic importance of IS/IT which are commonly argued as the natural segment for the work done in IS/IT planning. The evolutionary approach is characterised by a 'fatalistic' situation in the marketplace where a dominant metaphor in this category is that of the Darwinian evolutionary paradigm (Hannan & Freeman, 1988; Williamson, 1991). The processual approach emphasise the 'imperfect' and temporal nature of all human activity which pragmatically accommodates strategy to the imperfections of the market (Cyert & March, 1963; Minzberg, 1978, 1987; Pettigrew, 1973, 1985). The systemic approach is relativist, regarding the ends and means of strategy lined strongly to the culture and powers of the local social systems in which it is placed.

It is recognised that current models within corporate strategy are only just coming to terms with the importance of this type of analysis and the model itself is best seen as a heuristic device upon which understanding can be developed. Furthermore, in terms of the process of IS/IT planning Whittington (1993) offers a rationalisation similar to the functionalist paradigm of the Burrell & Morgan (1979) model. For example, the systemic category of the Whittington model acknowledges that formal mechanisms have a part to play as do the informal aspects of culture and power within the local social systems. Thus, using factors such as the ones described for strategic planning does not naturally consider the extent of cultural patterns within organisations. It is argued, therefore, that this omission may explain the difference in perception between the conceptualisations of strategy by central IS/IT departments and the end-user managers.

The major contribution of the strategic information systems debate has been to heighten awareness of the strategic potential for IS/IT - moving it away from a back room programming discipline to a mainstream business discipline. As noted in the control/slack analogy, the conceptualisation of technology for efficiency gain is to analyse IS/IT in terms of its effective application. However, findings within this paper suggest that the level of effectiveness can be based on many criteria with varying levels of rationality attached. It might be considered that the same principles apply to information systems as they do to organisations, where Stacey (1993) notes;

'Organisations exist because people within them and outside them are willing to support them in financial, political and legal terms. Successful organisations are those that do reasonably enough what those inside and outside principally expect from those organisations or will accept from them. Success can be then judged only in terms of the nature of the primary task that the community sets for an organisation. Failure of that task leads to the withdrawal of support.'

To evaluate a successful system one key criteria are the views of its principal stakeholders. Indeed, the corporate strategy process is increasingly not being seen as the application of a series of models and techniques (classical approach) but rather as a 'congruence of agenda' (Hackney 1994). Such approaches have attempted to extend the analysis beyond a perceived static situation and to include the processes involved. The congruence assumes relatively definable situational factors and that the planning process can in some way assess the agendas and synthesise those multiple perspectives over time. The evidence in this paper, on the levels of change in work tasks, suggests that such an approach goes some way to capture the complexity of the strategy process. There appears also, in recent years, to be an increased interest in social perspectives such as 'structuration theory' which considers a more holistic view of the organisation (Walsham, 1993). Congruence between stakeholders must come from the end-users themselves and their cultural and professional relations with central IS/IT functions. There is clearly a further learning agenda here which extends beyond prescrip-
Conclusion

The findings suggest that end-users tend to have a very low opinion of central IS/IT support. Whilst a high number of end-users had some input into either the planning, analysis or design phases of IS/IT, they still felt largely disenchanted from the strategy process. For instance, whilst a small number had been given presentations regarding IS/IT plans, none of the respondents had been part of the planning process. Furthermore, the responses to the learning sections, within the questionnaire, were quite favorable in the sense that end-users were often given an opportunity to study corporate developments. However, with regard to IS/IT exploitation learning seemed to be at an individual and technically oriented level. The end-users felt they could offer very little to the design or enhancement of centrally developed applications. Their perceptions suggest that whilst learning on this level was generally encouraged, organisation learning was restricted with respect to IS/IT. Learning generally in IS/IT remains to be seen as focused on technology skills rather than on management and information. The structure of end-user work activity was also highly ephemeral and changeable. Even what seemed initially to be a very structured task required intuitive human action which clearly has implications for the effective application way IS/IT. The paper demonstrates that revisiting the stages of growth theories provides, when linked to empirical data, useful insights for the exploitation of current IS/IT systems in organisations and the notable conclusion that end-users are not fully complemented within strategic management planning thus inhibiting its more effective processes.

Further research could usefully determine these results in more depth in additional specific context. For example, the power and control structures often reported in the public sector from within government and the NHS. The opportunity to revisit an early theoretical perspective on IS/IT planning, in the form of the stages of growth model, has demonstrated its value for the conceptual evaluation of empirical data. The field of SISP clearly requires the adoption of more novel approaches to previously discarded opportunities for further applied research.

Appendix

Research into End-User Use of Information Technology and Workflow

The following is a confidential questionnaire which may support some academic research being undertaken in Manchester. All the information contained in the questionnaire remains anonymous and confidential.

Some of the questions may seem a little irrelevant or sometimes ambiguous. Please put down answers that are honest as possible. Please ask if you do not understand any of the questions. Use the back of the page if you run out of space.

Section 1: ABOUT YOU AND YOUR WORK

1. Can you briefly introduce the job you do (Please describe)
2. How would you describe your job? (Please tick the most appropriate boxes)
   - Middle management
   - Largely manual
   - Administrative
   - Personal Assistant
   - Senior management
   - Trainee manager
   - Other (Please describe)
3. As far as possible, can you identify the most common activities that you undertake in your job. (Please describe)
4. Can you describe the primary function of the department to which you belong (Please describe)
5. Approximately how long have you worked in your current position .......... Years .......... Months
6. Length of service in your current organisation (if different from above) .......... Years .......... Months
7. Have you any training in computing or information technology? (Please tick) Yes No
   If yes, can you briefly provide details(Please describe)
8. Approximately how long have you been using computers? .......... Years .......... Months

Section 2: ABOUT YOUR WORK ENVIRONMENT

9. In your company, who are the IT ‘experts’? (Please tick one or more)
   - Your boss
   - Yourself
   - IT staff
   - One or more colleagues
   - Other (Please describe)
10. When difficulties arise with the computer systems, do you work out solutions as a team with colleagues? (Please tick)
    - Often
    - Sometimes
    - Never
11. Who do you first turn to for help on the computers? (Please tick)
    - A work colleague
    - IT staff
    - Your boss
    - Your boss
    - Your boss
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Your boss  □  □  □
Other  (please describe)

12. Do you discuss computer issues that arise with colleagues? (please tick) □ Often □ Sometimes □ Never

13. Comment on the frequency of question type (please tick)
   Often Sometimes Never
   How do I do...
   Why do I need to do...
   Where do I get the information from/to?
   Where is the information going to?
   Can I transfer information electronically?
   Can I get software for...
   What do I need to have to achieve...
   What advantage is there in doing...
   How do I do...
   Why do I need to do...
   Where do I get the information from/to?
   Where is the information going to?
   Can I transfer information electronically?
   Can I get software for...
   What do I need to have to achieve...
   What advantage is there in doing...

14. Do you look for ways to simplify your job by the application of IT? □ Often □ Sometimes □ Never

15. Do you regularly suggest alternative ways of doing things to your boss? (please tick) □ Often □ Sometimes □ Never

16. Do you feel that the current use of computing technology sometimes inhibits the way you work? (please tick)
   □ Yes □ No
   If Yes please describe how and in what ways. (Continue on the back of this sheet if necessary)

17. Does your computer automatically transfer information from other departments/sections within your organisation? (please tick) □ Yes □ No □ Don’t know

18. Does your computer automatically transfer information from suppliers, customers or other external bodies? (please tick) □ Yes □ No □ Don’t know

19. Do you ever suggest what you need in terms of IT to do your work to your boss? (please tick) □ Yes □ No
   If yes, would you say that it is easy to get what you want? (please describe)

20. Have you attended any IT training or education courses in the last year? (please tick) □ Yes □ No
   If yes, what were they? (please describe)

21. Do you feel that you need IT training courses to learn? (please tick) □ Yes □ No □ Don’t know

22. Do you have a learning or personal development plan at work? (please tick) □ Yes □ No □ Don’t know

23. In your organisation, can you identify any learning facilitating procedures that are available to you? (please describe)

24. In your opinion, is learning seen as important in your organisation (please describe)

25. Comment on how your boss would view you reading IT or computing literature? (please describe)

26. Are you given opportunities for day release and other self development activities? (please tick) □ Yes □ No □ Don’t know

Section 3: The Information That You Use in One Aspect of Your Job

To answer the questions in this section, it may help to consider just one of the major work tasks or activities that you undertake as part of your work. Try and choose one in which you process or manipulate information in some way. If you do not understand the question then please write ‘Do not understand’ in the question slot. Not all questions will necessarily apply. In this case, write ‘Not applicable’ in the question slot.

27. Detail one of the most important work tasks that you undertake. This may or may not be the most frequently undertaken work task. (please describe)

28. In what way is the above activity important to the job you do? (please describe)

29. How often do you undertake this activity? (please tick)
   □ Many times per day
   □ A few times per day
   □ Once a day
   □ Once or twice a week
   □ Once or twice a month
   □ Once a year
   If none of the above, comment on the frequency (please describe)

30. Would you say that the activity changes in some way every time that you do it? (please tick) □ Yes □ No
   If yes, then comment on the typical types of changes that occurs to the job activity. (please describe)

31. Does anybody else do the same task in the organisation? (please tick) □ Yes □ No

32. Do you handle information in order to do this job task? (please tick) □ Yes □ No
   If yes, please give some details of the type of information that you handle (please describe)
33. Do you use a computer for all or a part of the work task? (Please tick)  □ Yes  □ No
If yes, why do you use a computer to do this processing? (Please tick)  Yes  No  Not sure
Because of its speed  □  □  □
Ensure quality of results  □  □  □
Because the boss says so  □  □  □
The IT section suggested it  □  □  □
To share electronic information with others  □  □  □
Impossible to do it without a computer  □  □  □
Because somebody else says so  □  □  □
The question is irrelevant to me because I have never questioned it  □  □  □
Other reason (Please describe)

If you have answered ‘no’ for both questions 32 and 33, then please go to question number 42.

34. Where does the information come from to do the task? (Please describe)

35. How do you receive the information? □  Computer generated report
□  Verbally
□  By telephone
□  By manual report
□  On disk
□  By fax
□  By e-mail
□  Other
If other, please give details (Please describe)

36. Is there a single source of the information? (Please tick)  □ Yes  □ No  □ Don’t know

37. Do the source(s) of the information change regularly?  □ Yes  □ No  □ Don’t know

38. Is the source of the information on computer before you use it?  □ Yes  □ No  □ Don’t know
If yes, who puts it there? (Please describe)

39. After getting the information necessary for the task, do you add, change or collate the information in any way?  □ Yes  □ No
If yes, what do you do to it? (Please describe)

40. Are decisions made by you or by somebody else based on the information? □ Yes □ No □ Don’t know
If yes specify typical decisions that are made (Please describe)

41. Do you store any of the information? (Please tick)  □ Yes  □ No
If yes, please specify where (Please tick)
□  Computer disk
□  Filing cabinet
□  In-tray
□  Cardbox
□  Other

The above is a small part of a bigger research programme. The following stages commencing in summer 1995 will involve a number interviews in order to evaluate the work that you undertake on computers to achieve efficiency at work. During the interviews, it might be possible to identify better ways of achieving results. You may think of it as free consultancy!

42. Would you be willing to spend an hour or two for a further interview? (Please tick)  □ Yes  □ No
If yes, please give:
Your name
Your organisation name
Your telephone number
Your job title

Many thanks for your time

References


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