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Policy and Practice: The Institutionalisation of End-User Participation for Systems Development in Organisations.

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Policy and Practice: The Institutionalisation of End-User Participation for Systems Development in Organisations.

Abstract

There are many in the information systems discipline who argue that there is a deficiency in the extant understanding of end user participation in information systems development: this study addresses this issue and contributes to the cumulative body of research on the phenomenon. The findings of the present study illustrate that a high degree of direct and indirect user participation did not guarantee the successful implementation and use of information systems in the organisation studied: such participatory development practices did, however, result in the development of systems that adequately captured user requirements and hence satisfied user informational needs. That said, the central conclusion of this study was that user dissatisfaction with developed systems centred on the poor management of change in the organisation. Studied

Keywords: User participation, user involvement, user representation, participative policies and structures, organisational culture, political conflict, change management, systems implementation, IS development strategies.

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Introduction

The conventional wisdom within the information systems community suggests that user participation is central to the successful development of information systems. Ives and Olson (1984, pp. 586) report that: *"It is almost an axiom of the MIS literature that user involvement is a necessary condition for successful development of computer-based information systems"*; nevertheless, these researchers proceed to argue that the relationship between user participation and successful systems development is neither grounded in theory nor substantiated by research data. This argument has been re-iterated by Cavaye (1995) following a comprehensive review of research in the area. It is clear from Cavaye's analysis that the phenomenon is not well understood; indeed the same has been said of the information systems development process as a whole (Myers, 1995; Lewis, 1994; Lyytinen, 1987). Researchers in other disciplines provide some indication as to why this situation exists. Pondy and Mitroff, for example, (1979) point out that organisations are extremely complex systems; accordingly, Daft and Weick (1984) argue for a conceptualisation of organisation-based phenomena that operates at a higher level of system complexity and which incorporates organisational activities and variables that have not been captured in other less complex approaches. Leonard-Barton (1995) echoes this perspective and maintains that confusion about the benefits of user participation has arisen, in large part, because many studies have treated the topic simplistically. In order to avoid such pitfalls, Cavaye (1995) argues for qualitative, case-based empirical research that allows researchers to capture the "rich picture" of user participation in the appropriate context. Cavaye concludes that such approaches to research can overcome many of the limitations and weaknesses of extant empirical studies, and hence offer the best route to the attainment of an understanding of the phenomenon.

In line with the foregoing perspective, the objective of the present study is to contribute toward a fuller understanding of the concept of end user participation in the development of organisational information systems. The research study extends Cavaye's (1995) descriptive framework by integrating additional dimensions relevant to the phenomenon in order to generate a meta-analytic framework that provides a suitable reporting mechanism for the study's research results. In so doing, it attempts to forge a direct link with previous studies and hence contribute to the cumulative body of research and theory in the area.

Several dimensions to the concept of user participation have been delineated in previous research; Section 2

begins with a discussion of these. However, the main point of departure for this study is Cavaye's (1995) survey and analysis of past research; accordingly, a review of her research framework is presented final part of Section 2. In Section 3, the research approach and method is discussed. The following section then provides a description of the embedded units of analysis of the case, and subsequent to this, the case findings are analysed and discussed. Finally, the implications of the findings and the conclusions from the study are presented.

Review of Previous Research on End-User Participation in Information Systems Development

Despite a considerable volume of research on the phenomenon of end-user participation in systems development disquiet has been voiced at the absence of a cumulative body of evidence that would support claims to its importance as a necessary ingredient in successful systems development (Cavaye, 1995; Ives and Olson, 1984). A brief review of the findings from the literature will shed some light on this and provide the required context for the present study.

User Participation, Involvement and Success in Information Systems Development

In the past, research into user participation or involvement has been conducted on the basis of illustrating a link between such concepts and success in systems development (McKeen *et al.,* 1994). As Cavaye (1995) illustrates, this research has not offered conclusive proof of a link between the concepts of user participation and system success (cf. Ives and Olson, 1984). Part of the problem rests with poor definition of the concepts under study. In order to address this deficiency, Cavaye emphasises the importance of providing a clear definition of the concepts of participation and involvement as they lend themselves to ambiguous use and are thus capable of several interpretations (cf. Selznick 1949).

The terms user participation and user involvement have been used interchangeably in the IS literature; however, in other disciplines as the concepts are accorded separate and distinct meanings (Barki and Hartwick, 1989). In order to address this anomaly, Barki and Hartwick (1989) argue that the term *user participation* be utilised to refer to development-related activities and behaviours of users and their representatives during the development process, and that *user involvement* be used to refer to the subjective psychological state that reflects the level of importance and personal relevance of the information system to users. These researchers also argue that *user participation* is one of the more important antecedents, or causes, of *user involvement*—contingent on a number of factors which are said to influence the strength of the relationship. Implicit in this conceptualisation is the notion that users who do not participate either directly or indirectly in the development

process, but whose views are represented by individuals or groups of other users who do participate, are in fact *involved* in the development process. The nature and circumstances of such involvement may prompt users to influence the trajectory[1] of the development process and its outcomes, either by influencing their peers or by political action within the organisation (see Markus, 1983; Kling and Iacono 1984).

As a construct, successful systems development is a nebulous term; hence, it eludes direct evaluation. Accordingly, IS researchers employ surrogate measures to measure the success of development outcomes. For example, Ives and Olson (1984) propose system quality and system acceptance as appropriate '*outcome variables'*. Nonetheless, user satisfaction with the developed system has been widely employed by researchers as a surrogate for system success (Cavaye, 1995; Gatian, 1994). This study does not attempt to measure system success: consequently, it does not employ surrogate measures to dimension the construct in relation to the systems studied. Being mindful of the fact that there was not one but several constituencies of social actors with an active interest in the trajectory and outcome of the development projects under research, the study instead relied on the perspectives and constructions of social actors in both development processes and their related environments to indicate the perceived *success* of these endeavours and their outcomes (Cf. Baumann, 1978).

Within Discipline Perspectives on the Need for Participation in the Systems Development Process

The participative approach to systems development is founded on the belief that the development process is influenced by social, political, and economic factors (Budde and Züllighoven, 1983). Kensing and Munk-Madsen (1993) put forward an epistemological argument which posits that participatory design is needed to gradually build up the knowledge required for developing and using a new system. Additional arguments for the need to adopt participative approaches for systems development are articulated by Greenbaum (1993), these include: *A Pragmatic Perspective*—participation offers an opportunity for developers to build systems that work better, for business management, it offers a way to increase product and service quality (Kensing and Munk-Madsen, 1993); *A Theoretical Perspective*—since system developers and users do not experience the same things, this limits how well they can understand each others experiences, a mechanism is therefore required to facilitate a sharing of *'world views'*; *A Political Perspective*—systems developers have an obligation to provide people with the opportunity to influence their working lives, and to build systems that are

[1] Kling and Iacono (1984) posit that the *development trajectory* of an information system is the sequence of its past social and technical configurations coupled with the sequence of its potential future configurations.

cost-effective and which add to users quality of work-life.

Type and Degree of End User Participation

Previous research indicates that user participation takes many forms—from formal to informal, direct to indirect, and strong to weak. Previous research indicates that user participation takes many forms—from formal to informal, direct to indirect, and strong to weak. The work of Mumford (1979) and Ives and Olson (1984) presented in Table 1, illustrates multidimensional nature of the construct.

Table 1 Types and Degrees of User Participation in Systems Development

Types of participation Mumford, (1979)	***Degrees of user participation*** Ives and Olson, (1984)
Consultative; in this type of participative development, design decisions are made by the systems group, but the objectives and the form of the systems are influenced by the user needs, especially in terms of job satisfaction. *Representative*; here, all the levels and functions of the affected user group are represented in the design team. *Consensus*; participation of the consensus variety occurs where all staff in the user functional area are involved throughout the ISD process. At the very minimum this should involve communication with, and consultation of, users by designers.	*No participation*; the users are unwilling or are not invited to participate. *Symbolic participation*; user input is invited but ignored. *Participation by advice*; user advice is solicited through interviews or questionnaires. *Participation by weak control*; users have to "sign-off" responsibility at each stage of the ISD process. *Participation by doing*; direct participation a development team member or as the official 'liaison' with the ISD group. *Participation by strong control*; the user funds or initiates the development of the IS; in this case, favourable future performance evaluation of the user may be dependent on the functioning of the IS itself.

A Review of some Positive and Negative Aspects of End-User Participation

A review of research on user participation in ISD by Ives and Olson (1984) illustrated several benefits associated with user participation in systems development (refer to Table 2); these findings have been confirmed by recent studies on the phenomenon.

Table 2 Reported Benefits of End-User Participation (adapted from Ives and Olson, 1984)

End-user participation in Systems Development is predicted to improve system quality by:	Recent studies that lend support for these observations
Providing a more accurate and complete assessment of user information requirements	Hirschheim and Newman, 1988
Providing expertise about the organisation that the system is to support, expertise usually unavailable within the information systems group	Euchner et al., 1993; Kozar and Mahlum, 1987
Avoiding development of unacceptable or unimportant features	

Improving user understanding of the system	Amoako-Gyampah and White, 1993
Participation may lead to increased user acceptance by:	
Developing realistic expectations about system capabilities	Lawrence and Low, 1993
Providing an arena for bargaining and conflict resolution about design issues	Euchner et al., 1993
Leading to system ownership by users	Kozar and Mahlum, 1987
Decreasing user resistance to change	Hirschheim and Newman, 1988; Kozar and Mahlum, 1987
Committing users to the system	McKeen et al., 1994; Barki and Hartwick, 1994.

In an overall context, several studies also suggest that user participation increases user satisfaction with the developed system (McKeen *et al.,* 1994; Amoako-Gyampah and White, 1993; Doll and Torkzadeh, 1989; Baroudi *et al.,*1986).

Researchers argue that development projects in which user participation is successfully operationalised exhibit the following characteristics or success factors:

- Selection of users, the timing of their involvement, and the type of expertise/problem domain knowledge they embody is said to positively influence participative outcomes (Leonard-Barton, 1995).
- The existence of top management commitment/project champion (Lawrence and Low, 1993; Jarvenpaa and Ives, 1991; Kozar and Mahlum, 1987; Doll, 1985; Sanders and Courtney, 1985).
- The use of a consensus approach with participation by doing, coupled with strong control as a means to execute a participative strategy (Kozar and Mahlum, 1987).
- The in-depth education and training of user groups in methods of problem definition and description as opposed to the application of a technological solution to the problem (Kozar and Mahlum, 1987).
- Setting a project deadline that would impact on all users/functional units involved in the development (Wong and Tate, 1994).
- System ownership should be with the users from the beginning (Wong and Tate, 1994).
- The development team have to make it clear that user input is wanted and valued (Amoako-Gyampah and White, 1993).
- Positive attitudes and open communication have to exist between users and developers (Amoako-Gyampah and White, 1993).

In as much as the above findings view participation from a positive perspective, there are also negative dimensions to the phenomenon.

Factors that Negatively Influence the Participative Process

Several studies also indicate that user participation in systems development is neither trouble-free nor welcomed by developers. For example, in an empirical study on the perspectives of project team members and systems development success, White and Leifer (1986) reveal that developers did not perceive user participation as being critical to successful outcomes for the development process. This, in effect, supports the observation of Newman (1989; pp. 138) that 'pseudo-involvement' best describes certain cases of user participation and that *"the analyst is interested in user involvement to the extent that the user merely supplies information for design purposes."* It appears that analysts adopt a position that 'our way is the best way', and side-line the user constituency in terms of their contribution to successful systems development—this can only imply that developers see themselves as occupying the pivotal role in systems development. In a related vein, Wong and Tate (1994) argue that in order to achieve the benefits associated with user participation in systems development, issues such as inter-departmental conflict and the influence of political actors on the development process have to be addressed. Finally, several factors that may negatively affect the ***quality*** of user representation have been proposed by Land and Hirschheim (1983):

- The end-user representatives may be viewed by colleagues as hostages to the 'experts' or having 'joined the other side'.
- The proposed system may involve large numbers of users scattered over many locations.
- The end-users may not be sufficiently motivated to take an interest in their representation.
- The end-user representatives may not see themselves as responsible to or representing the users in the development activity.

It is clear that these factors are directly related to issues within the user constituency itself. Taken together then, these often-contradictory findings indicate that the end-user participation is neither simple nor straightforward, rather it is complex social phenomenon. In as much as the research in the sub-section had shed light on the ambiguous and equivocal findings on user participation, Cavaye's (1995) meta-analytic framework provides a suitable point of departure for the present study by providing an in-depth meta-analysis of the phenomenon.

A Model and Framework for Examining the Concept of User Participation in Systems Development

In a study that provided a very comprehensive meta-analysis of previous research into the user participation

concept, Cavaye (1995) developed a framework with which to synthesise and evaluate existing research. The framework, as presented herein (Table 3), offers a synopsis of the salient findings of previous research, as reported by Cavaye. In so doing, it indicates the multidimensional nature of the concept. For the purposes of this study, the framework was utilised to provide a mechanism for the analysis and presentation of the qualitative research findings reported herein; its use also allowed a contribution to be made to the cumulative tradition in the area by forging a link with previous research.

Research Method

Recent research on information systems development within organisations has indicated that an interpretivist approach to research on the development process is, perhaps, the most appropriate vehicle for the study of this phenomenon (Myers, 1995; Kanungo, 1993). However, as Galliers (1992, 1985) illustrates, IS researchers may choose from among several interpretive approaches when investigating IS-related phenomena. Boland (1985) was one of the first within the IS field to specifically advocate hermeneutics as a valid interpretive approach to research on the phenomenon of information systems development: Myers (1995), Kanungo (1993) and Visala (1991) have also recommended that hermeneutic philosophy inform research in this area, while Lee (1995) has championed the use of hermeneutics in broader research contexts within the field.

Foundations of Method in Hermeneutic Research

The activity of interpretation is practiced by people in everyday settings, it is an innate characteristic of the human condition (Ricoeur, 1981; Heidegger, 1976). As Heidegger (1976) and, later, Gadamer (1975) suggest, a social actor will, in the absence of complete knowledge, first look to their preunderstanding of a

Table 3 A Framework for Analysis of the User Participation Concept (adapted from Cavaye, 1995)

1. Contingencies	**Related Research Findings**
1.1 Organisational Variables	
Time for development	User participation may not be possible if there is tight time-boxing of the development project.
Financial resources available	Because user participation increases the costs associated with a development project, budgetary restrictions may lead to no user participation, or, if it does occur, a lower degree or different type of participation.
Top management commitment	Top management often provide the budgetary and manpower resources (developer and user) necessary for development projects.
1.2 Project-Related Factors	
Degree of task-structure	Relates to type of business process being supported by the target system. For example, highly structured and well-defined business processes require no user participation to enhance system quality or improve technical content.

Project complexity	All things being equal, a higher degree of user participation is indicated if the project or system complexity (technically or otherwise) is high, cross-functional boundaries are crossed, where systems support interdependent business processes, while a lower degree of participation is required for small systems.
Initiator of the project	User participation is required (to lower user resistance etc.) if the initiator of a project is not from the user constituency.
Technology available	The availability and use of systems analysis and design tools that are graphical, easy to use, and that allow prototyping impacts on the degree of user participation.
Expected change brought about by the system	Development projects that result in systems which significantly change work-related roles and conditions require more user participation.
1.3 User-related factors	
Willingness to participate	Even if user participation is required, users may not wish to do so.
Ability to participate	An inability to understand the technology, tasks involved, and the system environment impacts on the quality of participation. Effective developer/user communication is important here; a geographically removed user community also affects the degree of user participation.
User characteristics and attitudes	Cognitive differences between developers and users, and user attitudes are important to the quality of user participation.
2. Factors within the participation process that impact on the degree and effectiveness of user participation	
User analyst relationships	Different user-developer backgrounds and divergent 'world-views', affect project trajectory.
Influence and power relationships	Determines whether development outcomes are arrived at through consensus or fiat.
Communication	Ensures mutual understanding, but affected by relative organisational position of social actors.
3. Variables moderating the participation-success link	
Perceived control	If the introduction of a proposed system negatively influences control over work-related functions, then user participation may give the users a sense of control over development outcomes, and ultimate satisfaction with the system.
Desired level of participation	A user's desired level of participation may not coincide with the actual degree of participation.
Perceived importance and relevance	User attitude is influenced by the extent to which the system is both important and personally relevant to the user.

little-understood phenomenon and/or existing knowledge of the world and confront (or not) their prejudice-laden tradition or culture, they will then enter into a conversation or dialectic with the phenomenon and

ttempt to make sense of and understand it. Hence, hermeneutic philosophy posits that the goal of the interpretive act is to arrive at an understanding of the phenomenon under study (Bauman, 1978). Briefly, and in the context of this study, the hermeneutic method concerns itself with interpretation of social action, the objective being to make sense of such action in the context in which it occurs and, thereby, contribute to an understanding of socially-based phenomena such as end-user participation in systems development (Myers, 1995; Kanungo, 1993; Ricoeur, 1981).

There exist three fundamental tools in the hermeneutic researcher's toolbox which ensure that his/her interpretations are valid, accurate and of high quality and, more importantly, contribute to an understanding and

reliable reconstruction of the phenomenon's social world. These are: Madison's (1988) methodological principles of interpretation, and the hermeneutic concepts of the circle of understanding, and the dialectic (see Butler (1998) for a full explication of their central role in the application of hermeneutic method). These interpretive principles and hermeneutic concepts guided the application of qualitative data gathering and analysis method, tools, and techniques, employed in this study (see Miles and Huberman, 1994; Calloway and Ariav, 1991; Patton, 1990; Erlandson *et al.,* 1993). The constructivist/naturalistic paradigm, as delineated by Lincoln and Guba (1985) and Guba and Lincoln (1994) provided an overall set of guidelines and prescriptions for the conduct of this study. The suitability of the constructivist paradigm to the present study lies, mainly, in its espousal of the hermeneutic method for empirical research.

Overall Research Strategy

In keeping with prescriptions of the constructivist paradigm and the hermeneutic method, a qualitative, interpretive, case-based research strategy was adopted for the study. This strategy involved an exploratory, single instrumental case study with two embedded units of analysis—two systems development projects (Stake, 1994). Purposeful sampling was employed throughout (Patton, 1990; Marshall and Rossman, 1989). The case design utilised has been described by Yin (1989) as 'post-hoc longitudinal research'.

Research into the selected case and its embedded units was conducted through the use of individual interview and documentary sources over a period of one month. The Ives *et al.* (1980) research framework posits that research into the development process should take cognizance of the environments in which it is embedded. Accordingly, a total of twenty-one interviews took place with social actors from (a) the development processes (development project managers and developers), (b) the development environment (IS function management), and (c) the organisational environment (user representatives and user project managers who were considered to be representative of 'world views' in the relevant user constituencies).

Being a member of the organisation chosen for study, one of the authors was what Bødker and Pedersen (1991) have termed a *"cultural insider"*. Hence, as a member of the general business/user constituency, the company's largest labour union, and one of the company's participative forums, he was intimate with several of the sub-universes of reality that comprised the overall institutional reality (Berger and Luckmann, 1966). This provided the researchers with valuable insights into the organisation's culture and climate[2], and greatly aided in

[2] Pettigrew (1990) describes organisational culture *"as a phenomenon that involves beliefs and behaviour; exists at a variety of levels in organisations; and manifests itself in a wide range of features of organisational life such as structures, control and reward systems, symbols, myths, and human resource practices"* (pp. 414). Schneider (1990)

the interpretation of the case.

Case Description

The organisation chosen for study is Telecom Eireann, the Republic of Ireland's national telecommunications company (telco). It is a state-owned company with two minority shareholders; Telia—a Swedish telco—and KPN—the Dutch telco. Telecom provides a universal telecommunications service within Ireland, and presently enjoys a monopoly in many of its service areas. There are ten companies in the Telecom Group, the majority of whom are wholly owned subsidiaries. At present, it employs in excess of 12,000 staff. Being a large company, in a highly competitive national and international environment, it has dynamic information systems needs; these needs are fulfilled by its in-house information systems development function—the Information Technology Directorate (ITD): the within-case unit of analysis in this case study. The ITD is a centralised functional unit whose chief responsibility is the development, maintenance, and support of all corporate information systems. Based in Dublin, the ITD has a staff of over 240 spread among its six divisions. The research design also involved the selection of two systems development projects as embedded units of analysis.

The Structure and Mode of User Participation within the Case

Since its inception as a state-sponsored organisation, Telecom has adopted a participative approach to the implementation of organisational policy and decisions. This position was recently underlined when the company reiterated its policy in this area viz. *"The process of consultation with unions in regard to all the implications for staff of technological change, is one to which the company remains fully committed."*[3] To give effect to this policy, the company has instituted several joint bodies; for example, the Computer Liaison Committee (CLC), whose members are drawn from both company management as well the labour unions, deals exclusively with issues surrounding the introduction of information systems within the organisation.

A Participative Policy for Information Systems Development

In adherence to this participative approach to the development of its information systems, each systems development project within Telecom has a designated business owner or project sponsor. For larger projects a development steering group (DSG) is formed from the constituencies of interest within the organisation; managers from the relevant business areas and IT Directorate (ITD) normally comprise these groups. Two

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defines climate as an *"incumbent's perceptions of the events, practices, and procedures and the kind of behaviours that get rewarded, supported, and expected in a setting"* (pp. 384).

[3] Statement of Company Position on Current Industrial Relations Issues, October, 1995

project managers jointly manage each project: one is drawn from the business constituency and is the user project manager, the other is drawn from the ITD and is the development project manager. The latter manages the physical development of the system; the former manages business user input into the project in areas such as the provision and management of user-representatives, user groups, user test teams, and infrastructural resources etc. The development team normally consists of one or more business user representatives and a team of developers from the IT Directorate. The user representatives actively participate in most development activities. Although key users are interviewed to elicit system requirements, user groups are also formed to provide the development team with a core group of users for further requirements analysis and to verify and ensure that the system, as developed, will meet these requirements. Figure 1 illustrates the participative structure which operationalises the company's participative policies in the area of systems development. The structure emphasises certain positive aspects of the organisation's culture and climate and integrates them into the systems development environment. It was clear that this had a positive effect on user attitudes and behaviour toward development activities as users were reassured that

Figure 1 The Structure of User Participation and Involvement in Systems Development In Telecom Eireann

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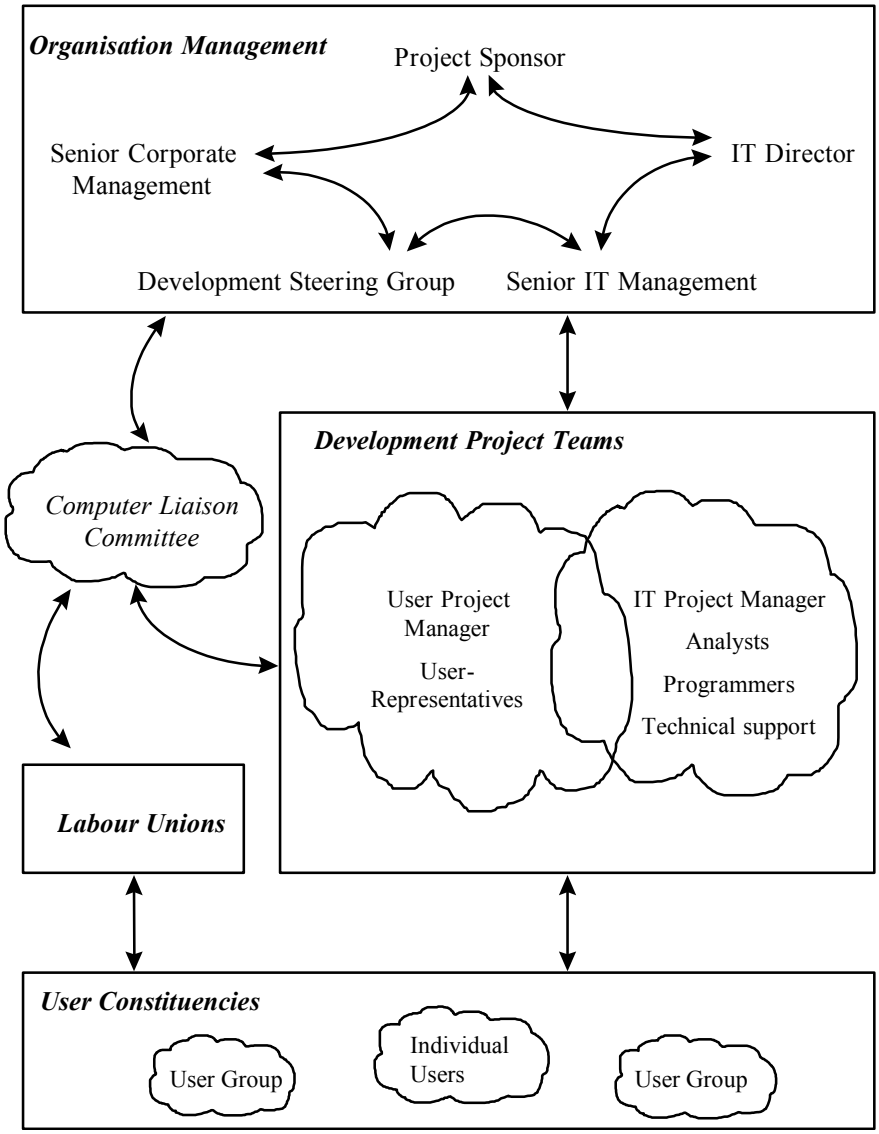

Legend: The double-headed arrows indicate the paths of communication and influence that exist between the different entities/social actors.

their voice would be heard, 'world views' captured, political conflicts resolved, and potential power asymmetries between developer and user communities negated. The following sub-sections present a descriptive narrative of the background to and salient features of the information systems development processes under study—this provides the necessary contextual depth for a meaningful examination of user participation in this organisation.

The Embedded Units

As already mentioned two systems development projects formed the embedded units of analysis in the study:

the Generic Appointment System and the Geographic Information System projects. The Generic Appointment System (GAS) grew out of a business need in one key area of the company's operations—its telephone repair service. Business managers across the organisation recognised the need to introduce efficiencies into the manner in which repair service workloads were managed, and associated service appointments made with customers. It was hoped that the introduction of this information system would eliminate the occurrence of unproductive visits by operational staff to customer premises when customers were absent. The GAS would also assist supervisors in their task of allocating workloads to their repair teams, which consist of operational staff. Both groups therefore had a keen interest in the development and implementation of this system as it impacted on some of their basic functions. The GAS also supports the operation of the company's ten fault-handling and repair centres.

The Geographic Information System (GIS) was developed to provide a graphical database of the telephone network in the general Dublin area. Heretofore, the planning and drawing office functions manually recorded network-related details using paper-based records and maps. The business manager responsible for this project recognised that there would be significant improvements, in terms of economic and operational efficiencies, to be gained in using a GIS in this area of its operations. However, this also meant that a radical change had to take place in one of its operational business processes. The development of the GIS has posed significant challenges to both business sponsor and developers alike. On the one hand was the issue of change management associated with the fundamental change in work practices/roles of the functional units who presently perform telephone network mapping, planning, and record handling duties. On the other was the challenge of developing a highly complex and sophisticated information system within a proprietary application development environment.

Table 4 orders and reduces the qualitative data and presents an analysis of the research results based on Cavaye's (1995) framework. This framework has been extended to include several additional descriptive dimensions that provide further contextual detail to the analysis of the concept. It can be seen that the characteristics, impact, and positive outcomes associated with user participation varied little across the embedded units of analysis in the case studied. The following narrative provides a more detailed exposition of several salient aspects of participative development in the case.

Table 4 An Analytic Framework for Research on User Participation

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1. General Characteristics	Description	GAS	GIS
Type of system under development	Operational Support Sub-System.	✓	✓
Degree of user participation	Consultative, Representative, Consensus.	✓	✓
Type of user participation	Participation by advice (indirect) ranging to participation by strong control (direct).	✓	✓
Participation vs. involvement	Users immediate to the project team(s) participated, while the majority of users were mainly involved in the development process.	✓	✓
Organisational perspective on participation.	Elements of pragmatic, theoretical and political perspectives existed within developer and user constituencies.	✓	✓
Users participating	User project manager, user representatives, user groups, and individual users employed. Joint staff/management bodies were also involved.	✓	✓
Location of development team	On-site at the business client's offices.	✓	✓
Measure of participation	Pan-lifecycle for user representatives. Individual users and user groups participated at key points in the development process. Users tested the developed system.	✓	✓
2. Contingent Organisational Variables			
Organisational policy on systems development	Organisational policy on participative development fully implemented.	✓	✓
Influence of organisational culture on team subcultures.	Shared organisational culture ensured that the team subculture was receptive to user participation in systems development.	✓	✓
Time for development	Although there was a very tight project time schedule, it did not impact negatively on the degree of user participation.	✓	✓
Financial resources available	Budgetary resources did not affect the degree or quality of user participation.	✓	✓
Top management commitment	A high degree of support existed from organisation and IS function management. A high degree of top management support existed in the first phase, but this waned in subsequent phases. There was also a lack of support from senior IS function management.	✓	✓
3. Project-Related Factors			
Initiator of the project	Business Management.	✓	✓
Project complexity	Complex project, several functional groups involved. Highly complex project, functional boundaries crossed.	✓	✓
Degree of task-structure	Medium-level task complexity, moderately defined business process.	✓	✓
Development Technology available	CASE workbench (IEF) that fully supported prototyping, significant impact on the quality of user participation: user representative trained in CASE tools. Proprietary development tools, SSADM employed in analysis and design, user representative trained in SSADM.	✓	✓
Expected change brought about by the system	High degree of change for one user constituency. New business process supported. Radical change to user role-related activities in two user constituencies.	✓	✓
3. User-Related Factors			
User perceptions of organisational climate	Users felt that a favourable development climate existed. Users were of the opinion that the organisational climate was negative; however, they felt that a favourable development climate existed.	✓	✓
Willingness to participate	Users eager to participate.	✓	✓

Ability to participate	The use of dual project development teams (user and developer), greatly facilitated user participation.	✓	✓
User characteristics and attitudes	Very positive attitudes by users. User computer literacy a problem. Shared organisational culture of benefit in accommodating different 'world views'.	✓	✓
4. Factors within the participation process that impact on the degree and effectiveness of user participation			
User/analyst relationships	Very good. Relationships were enhanced by the existence of a common organisational culture and favourable development climate in project teams.	✓	✓
Influence and power relationships	Several institutionalised checks and balances existed which countered any power asymmetries or political opportunism that may have arisen. This was due to the implementation of organisational policy by all the constituencies involved in systems development. Positive management attitude toward and acceptance of user input.	✓	✓
Communication	High degree of user/analyst communication; Greatly enhanced by on-site development training the user representative in IS development method and tools, and the prototyping approach adopted. Some improvement in communication brought about by user training in SSADM.	✓ ✓	✓ ✓
5. Variables moderating the participation-success link			
Perceived control	The type and degree of user participation gave users a sense of ownership and control over the system as developed, despite eventual reservations over the systems utility. Change management difficulties dominated and coloured user attitudes toward the system.	✓	✓ ✓
Desired level of participation	Good fit between user's desired and actual levels of participation.	✓	✓
Perceived importance and relevance of system to users	Medium to high degree of relevance as evidenced by the change management and industrial relations difficulties.	✓	✓

GAS and GIS Project Characteristics

A development team that consisted of a project manager, two analysts, the CASE vendor consultant, one programmer and a user representative carried out the development of the GAS. A CASE-supported RAD development approach saw development take place within a three month time period: however, the implementation of the first phase of the GAS took a further six months. As a distributed IS the GAS is comprised of 8 relational databases that serve up to 180 windows-based PC terminals in fault-handling centers and a further 400 in operational depots nationwide. The project was on time and budget.

The GIS development team consisted of a project manager, two analysts, three programmers, two user representatives, and a team of ten users to input graphical data and carry out test functions. Consultants from the software vendor also participated in the development process. The GAS was built around a proprietary graphical database engine that serves up to 40 high-end workstations. The first phase of the GIS development took almost two years to complete.

Implementation and rollout of the first phase took a further year. Project over-runs occurred in terms of both

time allocated for completion and budget.

User Participation in the GAS and GIS

User participation in the GAS and GIS development processes ranged from 'participation by doing' to 'participation by advice' (Ives and Olson, 1984). For example, user representatives on the development teams participated as an adjunct to analysts in the requirements elicitation exercises with individual users and user groups. In both projects user representatives were trained in the IS CASE tools and techniques, and participated in the use of these tools. User representatives also took an active role in the implementation of these systems. Other users not on the development teams participated in individual interviews and group sessions with the development teams in the requirements analysis phase. In the GAS project these users also participated in prototyping activities. In both projects users participated in testing the systems once developed.

Issues Impacting on the Effectiveness of User Representatives and User Groups

The high level and quality of participation in the GIS project was commented on by one developer who pointed out that: *"the team greatly benefited from the presence of user representatives. I was up to speed with user needs all the time.*" These sentiments were strongly endorsed by developers in the GAS project also. Developers in both projects also articulated the need for more active participation by certain users as it was felt that an increased level of participation by such users could have helped mitigate many of the contentious change management issues surrounding the implementation of the systems (cf. Robey *et al.*, 1993; Hirschheim and Newman, 1988).

Development project workshops consisted of developers and users from a single user constituency from the business area; this participative mechanism possessed certain flaws, however. For example, group workshops on the GAS project were used for political purposes as certain users introduced arguments to oppose or alter system features favoured by users who did not attend the sessions and who emanated from in other operational areas. User groups also tended to play on the stated objections of absent groups in order to influence the trajectory and outcome of the development process in their favour. Because of the high degree of political infighting between the various groups, the user representative on the GAS project observed there was a need *"to have all the user groups affected by the systems development present at each of the workshops; this avoided the emergence of a 'them and us' situation between users."*

In each project, coordination and control of both developer and user activities was highlighted as being of particular importance. Regular project meetings were considered to be an important mechanism in the

achievement of this goal. As expected, such forums helped developers to keep abreast of each others' progress and activities; however, the joint nature of such meetings provided user and development project managers with an opportunity to keep user representatives and developers abreast of external issues such as industrial relations problems.

The role and contribution of the user project managers in both the provision of project-related accommodation, materials and facilities, and also, in addressing business area implementation-related responsibilities and commitments was especially welcomed by the developer constituency. In the past, developers had experienced difficulty in obtaining the required level of user participation in these areas.

Pan-Lifecycle User Participation and the Benefits of On-site Development in the Business Area

Pan-lifecycle participation in systems development refers to the active participation and involvement of users at all stages of the development process: in the GIS and GAS projects it was facilitated through the policy of on-site development at the business user's offices. Prior to the development of the GIS and GAS, most systems development took place off-site, that is, within the IS function's own business accommodation. Senior IS function management and development project managers recognized that there were significant benefits to be gained from on-site development at the users' place of business. For example, it was thought that this policy would provide opportunities for both formal and informal, direct and indirect user participation, thereby improving user/developer communication and fostering good relations at all levels.

User Participation and Management of Change in Systems Development

The issue of change management associated with the implementation of both systems was found to exert a critical influence on the trajectory and outcomes of the development process. For example, the user representative on the GAS project reported that *"staff at the fault handling centre felt that their jobs/roles were being whittled away and that the control of the fault handling system was being shifted to the repair teams.*" This situation engendered a negative attitude towards the new system within one user constituency, and strongly influenced the deliberations of the Computer Liaison Committee (CLC).

Even though the development project teams were embedded within the user community, and user groups were employed in the elicitation/verification of requirements, in what could be described as a fully participative development exercise, problems arose in both projects at the implementation stage. Although the GAS had been accepted as developed by all the constituencies of interest, the CLC over-rode decisions taken and agreed by the user group. This situation arose despite the fact that one individual on the CLC had been involved

throughout the development process as a member of the user group. One developer explained this by suggesting that influential users who did not participate in the development process had voiced their *"unhappiness with system features (and that this) prompted the CLC to say no to the implementation of the system."* Hence, prior to its implementation at a trial site, several modifications had to be made to the GAS in order to address these objections. A very similar scenario existed in relation to change management issues in the GIS project: here business management were aware of the potential for significant change management problems to develop when the system was implemented. These problems related to the radical nature of the change in work-related roles, responsibilities and remuneration of one of the user constituencies involved, and although these users were satisfied with the system as developed, they were unhappy with the consequences of its introduction. Therefore, the absence of adequate managerial attention to these issues meant that, although both systems were developed with the cooperation of users, both projects encountered user-related obstacles prior to operation and use.

Discussion and Conclusions

In the organisation studied, it is a policy of management to have information systems developed with the participation of users. User participation in systems development has, therefore, been insititutionalised—it has been integrated into the social fabric of the organisation, it is the norm rather than the exception, and is an integral dimension of the organisation's culture. It is clear that the high level of commitment by all parties to participative development practices has had a positive influence on the culture and climate of the development environment and, also, on the development trajectory of the systems studied. Participating users felt empowered and non-participating users felt that their perspectives and interests had been taken into consideration. Also, the present study illustrates that such user participation did indeed contribute greatly to the development process and the success of its outcomes. For example, the successful elicitation of what were complex requirements were better apprehended and understood using this approach. Furthermore, the pan-lifecycle nature of participative development ensured that the end product closely matched user requirements and, hence, facilitated a high level of user satisfaction with the developed systems.

There is, however, a caveat to this observation, in that although the organisation had institutionalised the practice of user participation in what could be described as 'textbook' fashion, this did not guarantee the operation and use of the information systems once developed. There is a tendency in organisations to view the development process as a mechanism for the resolution of problems of a political nature that impact on the

operation and use of information systems. As the findings have illustrated, such political problems tend to be resolved within an organisation's industrial relations infrastructure. True, certain battles between users and management and between developers and users are played out within the development process and its environment, however, full-scale development-related wars are fought on organisational battlefields. Hence, it has to be emphasised most strongly that the type and degree of participation employed in the development projects studied gave no guarantee of successful post-development implementation of these systems. This situation arose because the fears of influential users in regard to the changes wrought by the introduction of the new systems in their work-related roles and responsibilities were not addressed prior to development or implementation.

If this study had adopted a simplistic approach and considered the influence of participation on systems development solely, without considering implementation issues as well, a different picture would have emerged. Thus, in any assessment of user participation, a distinction has to be made between the benefits that accrue to the development process and its product, and the impact that participation has on the eventual introduction and use of the product. Nevertheless, the findings of this study certainly support the argument that user participation is a major contributor to success in systems development.

With some notable exceptions (e.g., Markus, 1983; Wong and Tate, 1994), the diversity of and tension between users affected by the development and implementation of information systems has received scant attention in the literature. One of the central observations of this study is that users are not homogenous groups of social actors with convergent views on the trajectory and outcomes of the development process: rather, users tend to belong to distinct social groupings or constituencies, each with their own particular organisational agenda, collective *'world views'*, and socially constructed sub-universes of institutional reality. Hence, the findings of this study indicate that not only do developers have to be sensitive to user/developers issues, they have also to be aware of the potential for conflict between different user constituencies and to play an active role in avoiding and resolving such conflicts.

The foregoing case description, which has used and elaborated on Cavaye's (1995) framework, facilitates research to establish a cumulative tradition. It also provides explanatory insights into possible measures that need to be adopted in both organisational and development environments and, more importantly, the development process itself, if participative development practices are to provide the required contribution to successful systems development. This is keeping with the recommendation by Barki and Hartwick (1994) that

moderating variables between user participation and output criteria be identified and elaborated. For example, the role that technology (in the form of CASE) can play was seen to be significant, especially in relation to improving user/developer communication, aiding the prototyping of requirements specification, and by in diminishing the traditional schism between technically-oriented developers and business-oriented users. Also, the importance of the organisation's managerial ethos in creating an appropriate organisational culture and climate was much in evidence. Pfeffer (1994) has illustrated that Tayloristic principles shape and influence managerial attitude towards participation by the rank and file in organisational endeavours generally with negative consequences. Therefore, in the absence of explicit policies and structures in relation to user participation in organisations, this dimension to user participation has also to be captured.

Finally, it is clear that there is no easy way to determine the influence of complex social and organisational issues on participative development without examining the operationalisation of the concept in detail, and within real organisational contexts. This requires choosing appropriate cases for study and then subjecting them to rigorous examination with the objective of deepening the extant understanding of the phenomenon.

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