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Improving IS Action-Research with Project Management

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Abstract

This paper proposes to improve Information Systems Action Research with Project Management. Our main purpose is to promote the use of Action Research in Information Systems qualitative studies through a project management based formal structure.

Motivation

During the last years, the importance of Action-Research (Lewin 1946) in Information Systems Qualitative Research has been shown by several researchers (Avison et al., 1999; Kock et al., 1999). Nevertheless, the Information Systems community has risen the need to have frameworks that allow to take advantage and to facilitate the use of Action-Research as a valid research method, while at the same time trying to overcome the lack of rigor of some of its applications (Avison et al., 1999; Baskerville, 1999; Lau, 1999).

To address this need, we propose to use Project Management in order to improve the rigor in the use of Action-Research in Information Systems (IS). In this manner, from a first rather straightforward mapping between Action-Research and Project Management, we aim at the enrichment of Action-Research with Project Management. Thus, we follow the notion of Action-Research as a project (Kemmis and McTaggart, 1982; McNiff et al., 1996) while suggesting a concrete set of relevant project management tasks that, in particular, an IS action researcher could follow (Checkland, 1981; Mathiassen, 1998).

The paper is organized as follows. After this introduction, the second part presents Action-Research while the third one introduces Project Management. In the fourth part, we explain our proposal. The last part highlights the expected contributions and the future work.

Action Research

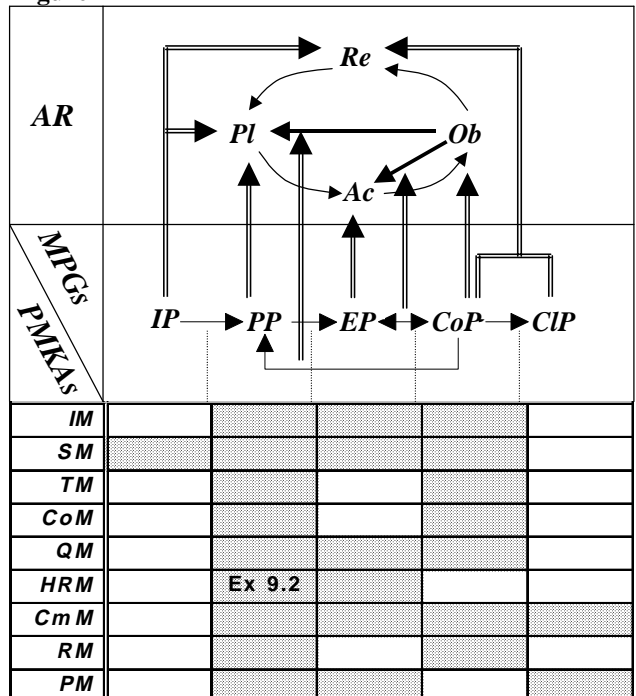
Action-Research (AR) is a post-positivist qualitative research method. For our purposes, at this stage of our research, out of the several features of AR (Avison, et al., 1999; Baskerville, 1999; Hult and Lennung, 1980; Peters and Robinson, 1984), we highlight and take two.

(1) *To search for solutions or improvements to practices.* The solutions are built reflexively with the intervention and participation of a researcher and a group of people, both acting in the practices, while leading to new knowledge.

(2) *To organize AR in a typical phased cycle* (top of Figure 1), representing AR as a solution-searching and learning process. AR four basic cycle phases are (Kemmis and McTaggart, 1992):

- Planning phase (Pl) identifies a plan to follow, which raises from the reflection of problems and an imagined solution.
- Action phase (Ac) executes the action planned, where action is the informed, careful, deliberate, reflective and controlled variation of the practice.
- Observation phase (Ob) measures, records and documents the action executed and its consequences.
- Reflection phase (Re) analyses the action executed, by studying, evaluating and questioning the observed results with the current practice and expected results. It includes Evaluating and Specifying Learning sub phases (Susman and Evered, 1978).

Figure 1



Several conduction problems are mentioned in using AR in IS (Avison, et al., 1999; McKay and Cowan, 1999) such as: the method and the approach used being not explicit; the validation process and the relevance of the research being unclear and/or collaborators lost during the AR project.

Project Management

According to the Project Management Institute body of knowledge guidelines (PMI, 2000, p. 2), Project Management (PM) is "the application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project" (ibid p. 3). These PM guidelines (PMI, 2000) is an ANSI standard and contain knowledge and practices generally accepted in PM. Nine project management knowledge areas describe such knowledge and practices in terms of their component processes. These processes are named Project Management Processes (PMPs). PMPs "are concerned with describing and organizing the work of the project" (ibid p. 7), and are described by inputs, outputs and techniques/tools to transform inputs into outputs. Furthermore, PMPs are organized into management processes groups.

Project Management Knowledge Areas (PMKAs) are nine (bottom of Figure 1): Project Integration Management (IM), Project Scope Management (SM), Project Time Management (TM), Project Cost Management (CoM), Project Quality Management (QM), Project Human Resources Management (HRM), Project Communications Management (CmM), Project Risk Management (RM) and Project Procurement Management (PM).

There are five Management Processes Groups (MPGs):

- (i) Initiating Processes (IP) "recognizing that a project or phase should begin and committing to do so".
- (ii) Planning Processes (PP) to devise and to maintain "a workable scheme to accomplish the need".
- (iii) Executing Processes (EP) to coordinate "people and other resources to carry out the plan".
- (iv) Controlling Processes (CoP) to ensure "that project objectives are met by monitoring and measuring progress so that corrective action can be taken when necessary".
- (v) Closing Processes (CIP) to formalize "acceptance of the project or phase and bringing it to an orderly end."

The MPGs and their relationships are shown in the middle of Figure 1. In particular, the grey boxes in bottom of Figure 1 indicate the existence of PMPs related to MPGs and to PMKAs (see below for a concrete example). We refer the reader to the PM guidelines (PMI, 1996, 2000) for a more detailed description of the above issues.

Improving AR with PM

Our proposal is based in the mapping between the phases of AR and MPGs of PM. Such mapping, which appears as double lines in Figure 1, is in many cases straightforward: Planning Processes with Planning phase; Executing Processes with Action phase and, Controlling Processes with Observation phase. However, the relationships are not so direct in other cases:

- Initiating Processes relate to both Planning and Reflection. With regard to Planning, AR requires making a commitment between the action researcher and the organization. With regard to Reflection, AR must start with a diagnosis of the current situation.
- Closing Processes and Reflection are related because both are final tasks when decisions must be taken regarding project/research conclusion or project/research cycled continuation.
- Controlling Processes are related with Reflection because the reflection emerges from the study or observation of the results of control.

As a consequence of establishing, clarifying and materializing this mapping, we have two outcomes:

- AR phases are enriched and formalized with the structure of PMPs. In this way, in order to explain the relevance of the research, the Planning phase could be structured with a PMP of Initiating Processes. That PMP (5.1 in PMI, 2000 p. 9) serves to introduce in the Planning phase tools and techniques oriented to secure the approval of the project. Obviously, those tools and techniques must be adjusted to measure the potential relevance of the IS-AR project.
- The AR cycle is enriched with new relationships between its phases, adapted from relationships among MPGs, linked internally by PMPs. The new relationships are: from Observation to Planning and from Observation to Action These new relationships open the possibility to operational adjustment and change according to observations realized on the action being taken, without the need to wait to the Reflection phase.

Example integration of AR with PM in IS

To illustrate the potential benefits from the integration of AR with PM, we now show the application of PMP 'Staff acquisition' (number 9.2 in the PMI, 2000, p. 18) in the AR Planning phase. This PMP is related to the area named Project Human Resources Management and to the process group named Planning Processes (see bottom of Figure 1).

PMP 'Staff acquisition' "involves getting the human resources needed [...] assigned to and working on the project" (PMI, 2000, p. 18). In the context of AR, this PMP is adapted to the negotiation of the members of the AR group with the following features:

- Inputs.
 - (i) A staffing management plan to recognize the readiness of the members of the organization.
 - (ii) A list of substitution members in case that some participant abandons the AR group ('Staffing pool description' input in PMP).
 - (iii) Organizational negotiation and staff motivation practices to integrate the staff into the group and to promote their collaboration into the research and improvement goals ('Recruitment practices' input in PMP).
- Outputs.
 - (i) AR group composition, clearly identifying participants, practitioners and customers. Moreover, it is important to show the influence relationships among them ('Projects staff assigned' and 'Project team directory' outputs in PMP).
 - (ii) To guarantee the availability of the members of the AR group (output directed towards the PMP 11.1 'Risk identification' and towards the organization).
- Techniques/tools.
 - (i) Negotiation with the organization and the practitioners ('Negotiations' technique in PMP). The negotiation must be oriented to promote that the practitioners become active participants of the AR group ('Pre-assignment' technique in PMP). This implies the generation of commitments for participants ('Procurement' technique in PMP).
 - (ii) Abilities to identify the potential of the participants and to select responsible participants.
 - (iii) To maintain the AR group members informed on the purpose and the objectives of the research when the group is in constitution.

The last output (2.ii) and the last two techniques/tools (3.ii and 3.iii) are new with regard to PM guidelines and we suggest them in order to cope with specific management of an AR project in IS, as drawn from the following two referenced problems in using AR in IS:

- The first one is reported by Olesen and Myers (1999, p. 329): "resources for the project [...] were not forthcoming" because "the IT department was less than enthusiastic about" the AR project. This problem could had been resolved or minimized with a formal commitment with the organization and people, through a staffing management plan (1.i) and by maintaining informed the participants (3.ii).

- The second one is indicated in West and Stansfield (1999, p. 47): "engaging willing collaborators" in AR is critic because an "action research study is dependent upon the contribution made by willing and able collaborators within a real-world problem situation". This problem could be solved with a staffing management plan (1.i), introducing practices of negotiation and motivation (1. iii), by obtaining a commitment about the availability of the members (2. ii), with an intensive negotiation (3.i) and by selecting rigorously the adequate participants (3.ii).

Note that this simple example integration has generated an entire series of considerations leading to the enrichment of an AR project with PM. The example configures in short a quick guide to cope with human resources planning of the AR group. Thus, this example already evidences the potential benefits of the full integration: Planning phase no longer conforms to just the preparation of the action, but also enforces the action researcher to think explicitly and formally about the selection of people.

In addition, these inputs, outputs and, techniques/tools should be applied referentially on two problems.

Expected contributions and future work

We expect that the contributions of our on-going research will be:

- To improve the rigor of AR use by enriching and formalizing AR phases with PMPs.
- To reinforce, first, the scientific acceptance or validity of AR in the IS research community and, second, to facilitate the utilization of AR by part of novel researchers in IS problems.
- To fill a gap in AR, in general, and in IS in particular, contributing with a more effective, concrete and detailed management approach for AR based in PM, that should improve the management and evaluation of AR projects in IS (Avison, et al., 1999).
- To increase the knowledge and comprehension about the social qualitative dimension of IS use and development.

Our future work is to describe in detail, to specify, to design and to implement a tool for supporting PMP-based IS-AR, by relating AR features to inputs, outputs and techniques/tools of PMPs. We also pretend to test and to validate our proposal in real IS-AR research projects.

Additionally, we think that our proposal could prove useful in providing Information Systems Qualitative

Research with a project-management-based basis to prepare, to execute and to manage research projects addressed with other qualitative research methods.

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