

The Analysis of the Relationship Between Information System Development and Organizational Development

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Abstract

This paper essentially presents a brief discuss of the relationship between information systems development and organizational development. The contributions are offered namely the findings of a study of the organizational delopment and information system development.

A brief review of the literature reveals that these two concepts in combination have been studied extensively, but that their conceptualization are somewhat fragmented in nature but the reflecion reveals that within each of the two main concepts, organizational development and information systems development, are correlated.

Keywords – Information system development, organizational development, organization, soft system

1. INTRODUCTION

As it is has been argued in the literature, the Information System (IS) perspective focuses strongly on “integrating information technology solutions and business processes to meet the information needs of businesses and other enterprises, enabling them to achieve their objectives in an effective, efficient way” [1]. An Organisation Development (OD) perspective focuses on the organisation as a system to be developed in its own right [2]. Within this viewpoint, Information System Development (ISD) can be examined in terms of its contribution to organisational improvement using or not information technologies. An OD can help change the way organisational issues, but also any issues that deal with ISD complexity, are viewed by linking them together into a holistic framework [3]. Such a framework would provide both the necessary frames of reference for understanding these issues for connecting these frames to methodological and technical practice.

Research on the relationship between these topics is not uncommon but it seems that there are a variety of perspectives and approaches to study this concept.

This paper presents the results of an exploratory investigation into the nature of the relationship between organizational development and information system development. The purpose of the study is to investigate this area of interest from a more inclusive point of view. To capture broader, and perhaps more embracing perspectives of information systems and organizational development respectively.

It has to be stated at this point for clarity’s sake, that the notion of ISD has a fairly broad meaning, which will be discussed in the literature review. However it can be stated that the term ISD as it is used in this paper refers to the competency of the organization in several areas that will allow it to bridge the gap between the organization and its IT/IS and to derive the most benefit from its IT/IS.

The paper is therefore structured to first provide a brief overview of the literature on IS development, organizational

development on a combination of these concepts. Finally some recommendations for further research.

2. METHOD

This research is characterized as exploratory, since it seeks to understand through content analysis (Bardin, 2000) the context in which this study is fitted and to provide greater familiarity with the subject of study (Cervo, Bervian, & Silva, 2007). For its accomplishment, a systematic review of the literature was carried out, making it possible to identify, evaluate and interpret relevant studies addressing the topics of the research, in particular, information system development (ISD) and organizational development (OD). To achieve this, the following steps were followed: (i) planning the review; (ii) identification of the main sources of literature; (iii) selection of literature based on keywords, followed by criteria for inclusion and exclusion. In the review planning step, the research was directed according to the purpose of the article, namely, to explore the approaches to ISD and OD existing in the literature, with the aim of analyzing the described concepts, models, application, features and functionalities. The selected scientific sources of the research work were the Scopus, Web of Science, IEEEExplore and AIS Electronic Library (AISeL). To find relevant articles, it was carried out a systematic search in the selected scientific bases articles including, either in the title, abstract or keywords, the two central themes of this study: information systems development and organizational development.

3. LITERATURE REVIEW

This section firstly describes the notions of Information System Development and Organizational Development briefly and will conclude with a brief review of research where both constructs were combined.

3.1. INFORMATION SYSTEM DEVELOPMENT

3.1.1. Diverse points of views

There are many definitions, models and perspectives related to information system development. To understand ISD's definitions we examine the literature the perspectives dominate in ISD practice and their assumptions. At the level of ISD research, a growing argument has raised awareness of

organisational issues and emphasized the point that ISD is a social as much as a technical process. The picture that emerges indicates that ISD is a form of organisational development [4]. Regarding perspectives of ISD [5], identify the *Science and Systems* perspectives, similar to, [6] distinction between "hard" and "soft" systems.

In the **Science** perspective, information systems are seen to be *structurally complex* entities with a large number of interacting parts. While these parts may be structurally complex themselves, they are ultimately made up of simple elements and interact through simple identifiable relationships [7]. Underlying hard systems thinking is a view of reality being systemic in nature requiring systematic methodological approaches [8], based on a set of rules and procedures that are constantly refined until they come to express the proven best process of development.

In the **Systems** perspective, information systems are *interactionally complex* entities having a large number of complex and indistinguishable interactions with their environments. The complexity and extent of interactions determine the system's behaviour [7]. This behaviour has emergent properties due to the synergy created from complex interactions. Systems need to be understood holistically and systemically because the successful development of such systems requires understanding of interactions and interpretations amongst the various actors [9]. The Systems perspective views ISD as a facilitation process [10], arguing that there isn't a single reality, but different perceptions of it. ISD is ultimately seen as a process of socially constructed meaning [7].

In the same way [2], identifies 3 scenario of ISD which are: *i) construction of computer system, ii) information system development and iii) organizational processes redesign.*

In the **scenario 1**, the ISD corresponds to an activity whose objective is the construction of computer systems (or computer applications) that will be used in an organizational context. In this scenario, the intervention is done essentially at the level of the computer systems, where the main result of the process development is a computer application. The scenario 1 corresponds to a technical view developed in areas closed to software engineering. Recognizing that the intended system will be used by people in an organizational context, the importance of the perception phase is recognized. This is thus considered crucial to the success of computer systems.

In the **scenario 2**, the ISD corresponds to the information systems development on itself. In this scenario information

systems development is understood as an intervention activity in the organization whose objective is to improve its information system. By intervention activity should be understood as an activity that affects a certain organizational situation in order to improve its performance, will introduce change in the organization. This intervention usually involves the adoption of computer systems to support some of the activities of the organization and its information system. It is understood that this organizational intervention activity should be called information system development. Interventions are sets of activities intended to improve the organisation's effectiveness in both quality of activities and performance terms [11]. Interventions represent the "technology" of OD and should not be confused with the process of intervention which refers to the process of entering into an existing clientsystem and establishing appropriate relationships with organisational members [11] [French & Bell, 1990].

In the **scenario 3**, the ISD is seen as a sub-activity of the redefinition of organizational processes. The purpose of the ISD is the organizational processes itself. Once changed the way how the business is conducted it will also be necessary to review how the information system supports the business and what computer systems can be used. This scenario translates concerns at the organizational management level. The emphasis of the intervention is placed on the processes of the ISD. This view draws attention to the fact that the ISD is not an end in itself but means that contributes to the functioning of the organization.

Interventions at the level of organizational processes can be more or less profound [2]. According this autor mentioning defines a spectrum of interventions that includes the following possibilities: (i) *process improvement*; (ii) *re-engineering processes*; (iii) *business reengineering*; (iv) *transformation*; and (v) *continuous renewal*.

The from these three scenarios, the view of the ISD underlying this paper corresponds to scenario 2. In this view, the construction of computer applications is a subproblem that may not even be considered, either because it is considered unnecessary the existence of computer support (remote possibility) or by the fact that the necessary and appropriate software applications can be obtained from third parties [2].

However, although the construction of applications is not essential, the definition of requirements is an important ISD activity. It is also recognized that the ISD can be conducted in the context of intervention activities directed to

organizational processes [2]. It is also considered that, although any of the three activities presented can be called information systems development, the one that can use this designation more appropriately is the activity corresponding to scenario 2. However, any of these activities – scenario 1, 2 and 3 have their opportunity in an organization. The decision to trigger any one of them will depend on the particular circumstances that characterize a given moment in an organization's life and on the way, it is understood to be able to effectively overcome situations considered problematic or to achieve improvements in the performance of the organization [2].

4. ORGANIZATIONAL DEVELOPMENT

Organizational Development (OD) itself is undergoing significant change in almost every aspect [12]. The field's literature reflects this dynamism through a diversity of views surrounding the field's.

The practice of OD covers a wide spectrum of activities, with seemingly endless variations upon them. Similarly, the study of OD addresses a broad range of topics, including the effects of change, the methods of organizational change, and the factors influencing organizational success [12]. Organization development is a planned process of change in an organization's culture through the utilization of technology, research, and theory [13].

Organization development refers to a long-range effort to improve an organization's problem-solving capabilities and its ability to cope with changes in its external environment with the help of external or internal people, or change agents, as they are sometimes called [11].

Organization development is a systemwide process of data collection, diagnosis, action planning, intervention, and evaluation aimed at (1) *enhancing congruence among organizational structure, process, strategy, people, and culture*; (2) *developing new and creative organizational solutions*; and (3) *developing the organization's selfrenewing capacity*. It occurs through the collaboration of organizational members working with a change agent using theory, research, and technology [14].

A number of definitions of OD exist and some of them presented above has a slightly different emphasis. Burke's description focuses attention on culture as the target of change; French's definition is concerned with OD's longterm interest; and Beckhard's and Beer's definitions address the process of OD [15]. The [15] suggested that for a process to be

called organization development, (1) *it must focus on or result in the change of some aspect of the organizational system*; (2) *there must be learning or the transfer of knowledge or skill to the client system*; and (3) *there must be evidence of improvement in or na intention to improve the effectiveness of the organization*.

Through these concepts we can conclude: (i) OD applies to changes in the strategy, structure, and/or processes of an entire system, such as an organization, a department or work group, or individual role or job; (ii) OD is concerned with managing planned change and is more an adaptive process for planning and implementing change than a blueprint for how things should be done, involving planning to diagnose and solve organizational problems, but such plans are flexible and often revised as new information is gathered as the change program progresses; (iii) OD involves the design, implementation, and the subsequent reinforcement of change; (iv) OD is oriented to improving organizational effectiveness [15].

Organization development can be distinguished from change management and organizational change. OD and change management both address the effective implementation of planned change. They are both concerned with the sequence of activities, processes, and leadership issues that produce organization improvements. They differ, however, in their underlying value orientation [16]

Change management focuses more narrowly on values of cost, quality, and schedule. As a result, OD's distinguishing feature is its concern with the transfer of knowledge and skill so that the system is more able to manage change in the future. Change management does not necessarily require the transfer of these skills. In short, all OD involves change management, but change management may not involve OD. Similarly, organizational change is a broader concept than OD [16]. As discussed above, organization development can be applied to managing organizational change. However, it is primarily concerned with managing change in such a way that knowledge and skills are transferred to build the organization's capability to achieve goals and solve problems [16].

5. THE ORGANIZATIONAL ROLE OF AN INFORMATION SYSTEM

The organizational role of an information system is concerned with the relationship and function of an IS within its organizational context. In the case of the organizational

role of an information system [17], distinguish three views - *technical, sociotechnical and social*.

A technical view regards an information system predominantly as a technical artifact, and assumes that its connections with its organizational environment can be reduced to well-defined inputs and outputs and ergonomic interface questions.

The sociotechnical view is based on the assumption of interdependent subsystems, the technical subsystem and the social subsystem which are designed jointly. It therefore is interpreted to form an intermediate value on the continuum technical vs. social.

The social view considers an information system primarily as an organizational and social system; an information system is seen as na integral, constitutive part of organizational communication, control, coordination, cooperation and work arrangements and not only as a separate support system for these organizational activities. An information system as a social system can be characterized as an embodiment of interpretive schemas, facilities of coordination and organizational/social norms.

6. ORGANISATION AND INFORMATION SYSTEM DEVELOPMENT

The OD concept can contains information about individuals and personal interactions inside the organization, it focuses on information about strategy development, work force coordination and external facts [11]. The ISD concept also contain information about all interventions. In organizations, information is used as a tool in interventions activities (OD or ISD). Information is manipulated and mediated via information systems and is also stored in them [18]. Information systems are developed through a process that includes activities for analysis, design, implementation, introduction, and sustained support, as well as process management [18].

The main elements of an information system are people, artifacts, and information entities. The people use information entities in their daily work as tools, e.g., for decision making and cooperation [4]. The information entities comprise the content, form, and structure of information. The artifacts, manual (e.g., paper-based), computer-based, and imaterial [4], contain and mediate the information entities and enable actors to manipulate the information [4]. The use-related imaterial elements (goals of work, cooperation, rules, practices, capabilities and

knowledge of the people, etc.) guide the use of the artifacts and information. Information entities and the artifacts form the core of the technical system, and the people and use-related immaterial elements form the core of the social system [4].

In organizations, the information systems development is increasingly related to the holistic development of the organization's business and information technology (Schekkerman, 2004) [19], so these cases, understanding organisational issues is important for both OD and ISD.

From our OD perspective, these issues indicate that ISD and OD are comparable activities. Organisational issues are important both in ISD and OD. ISD is not solely a technical process, but quite significantly a social one [10], or socialorganisational one, (Land et al 1992), which takes place in an organisational setting [20]. Information systems are themselves seen as a social systems relying on IT for their function [21]. This is important as the organisation too is a socio-technical system. As such information systems need to be contingent to very nature of the organisation [22].

The nature of ISD and together show how IS development relates to organisational development for example organizational culture, organisational structure & design, organisational change, business environment, technological environment and etc [3].

Organisational issues show that ISD is a form of organizational development as it directly impacts organisational functioning. ISD perspectives help us explore the requirements for change that a solution may have to take into account [3].

Traditionally ISD has been carried out in isolation of the organizational environment. However, the complexity of ISD as an organisational intervention proves that ISD is not confronted with isolated technical problems, but with a problematic situation. This includes a number of problems: *organisational, social, technical, interactional*, at different levels: *task process, personal, group, a variety of stakeholders: groups, management, users, a variety of influencing factors: other systems, procedures, cultures and a variety of contexts: organisational, business, change, ISD process, intervention* [3].

Organizational development, as a practical, social field, follows what happens to organisations and their business environments. The field's continuous theoretical and practical expansion into new areas, and a strong self-reflection process are instrumental in producing the uniqueness of the OD approach to other apparently similar fields [23].

From this view, ISD can benefit from OD's compatibility with organisations in challenging dominant perspectives. OD can help provide the business interface between organisations and technical systems development.

From the above point of view we can conclude that:

1. Already IT is part of transformational change efforts, (e.g. BPR). Many organisations now pursue future visions rather than reactively discovering and dealing with problems, and IT is helping realize these visions. While there is a similarity in principle, the two fields are completely different in the way they perceive organisational reality, the various actors and problematic situations [3];
2. ISD becomes important activities such as gaining entry, establishing a relationship and interaction with the organisation over the problem are managed at a superficial level [3];
3. The thrust of mainstream ISD approaches solve technical and usually computer related problems and without ignore people problems. OD deals with multiple (technical, organisational and people) dimensions of problems and therefore can help ISD become a philosophy rather than a technology [3];
4. Jelinek & Litterer [24] argue change will become more important as increased computerisation means that change in one part is multiplied and reproduced much more quickly within the organisation. An OD perspective could help ISD focus more on what happens to organisations [3];
5. The OD approach and values are favourable ways of solving problems in organisational settings. OD deals with change, intervention, process, organisational issues, people issues and organisational effectiveness and these issues are part of ISD interventions [3];

7. DISCUSSION AND CONCLUSION

Although ISD is seen as a very technical field, however, as IT improves it becomes closer to business concerns. Like OD, ISD too depends very much on what happens to organisations. Nowadays, IT is key for most organisations and ISD has stopped being a technical activity for organization. This will render ISD another social-organisational activity —ISD will have dissipated so much into organisations and society in general that we will stop thinking of ISD as a separate technical effort, but as organisation development. This is evident today as advances in IT are transforming organisations and introducing new organisational forms. ISD practice is currently lagging

behind the technological advances and ISD's efficacy is continuously challenged by organizational issues. Organization Development principles, values and approach have provided the missing context for ISD. OD has also been very useful to inform and elicit learning from ISD practice and support approach development.

We hope this paper becomes the stepping stone for future work in the area of the IS development process and its complexities, of approach development and of studies arguing for transformation in the field.

We believe the paper makes a number of key contributions to existing ISD knowledge. The emergent ISD process theory itself confirms arguments that ISD is a complex socio-technical and organisational process. It highlights aspects of development that have been traditionally outside the ISD perspectives.

Regarding the literature review, organizational studies applying empirical research, including case studies and/or action-research are necessary. This way developed theoretical models and frameworks can be applied and validated so that they can become effective tools for organizational interventions aimed at diagnosing and improving OD.

Finally, this paper shows that both Organisation Development and IS Development are comparable activities that can establish stronger links. We hope that our paper is a step towards that direction. For ISD, we hope our paper contributes ultimately in making successful IS development the unquestionable norm.

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