Creativity of End Users in Theory and in Practice

Malgorzata Pankowska
University of Economics in Katowice, Poland

INTRODUCTION

The critical and controversial role of end user in the research and development of business information systems encourages the companies to consider the inviting of end users to the value adding processes as partners. The literature studies allow for a very positive opinion on strong involvement of end users. There are a lot of methods emphasizing the user's activity as the essence of innovation and growth.

This article is aimed to explain whether the companies are conscious that they can turn their intangible assets, i.e., creativity of end users and transformation of IT knowledge of users into value. The article covers review of information system development methodologies, i.e., participatory design (PD), user centered system design (UCSD), actor network theory (ANT), user experience design (UX), end user knowledge management (UKM), end user as innovator approach (UaI), contextual approach (CA), creativity support system development (CSS), distributed cognition theory (DCT). The theoretical considerations are further supplemented by review of survey results on user acceptance of IT and user involvement in system development. The last part of the article comprises a general model of user knowledge management and user - patron relationship development for information system implementation.

BACKGROUND ON USERS' INVOLVEMENT IN INFORMATION SYSTEM DEVELOPMENT PROCESS

Innovation methods that involve customers and enable companies to deduce their needs are therefore widely discussed. Some customers are more appropriate to co-develop new products and services than others. Therefore, the IT suppliers and end users have created opportunities to be integrated and to exchange their knowledge and competencies needed for joint information system development. Collaborative engineering is an emerging approach to designing collaborative work practices for high-value recurring tasks. To implement a collaborative work practice, groups need to be trained or require facilitation support. A key requirement is the users' willingness to change. In the information system life cycle, the designers analyse the system and basing on design patterns derived from their expertise, they propose changes that are evaluated by the user community and then implemented. Involving end users in the development process requires that end users and developers can communicate in a common language to identify and specify requirements as well as solutions.

Participatory Design

The participatory design has focused on the design of user application or the co-realization of a more holistic composition of new and existing technologies and practices. Infrastructural design issues like programming languages, security and resource models do not seem to be in need of partnership and participatory design. According to Torpel *et al.* participatory design (PD) is about the direct participation of those whose working lives will change as a consequence of the introduction of a computer application (Torpel *et al.,* 2009). PD assumes that users are the best to determine how to improve their work, and the designers should only be consultants.

User Centered Design

The User Centered Design (UCD) is a philosophy that is based on the needs and interests of users, emphasizing the creation of usable and understandable products.

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Not only the profile, the activities and environments of users are being investigated, but also their goals. UCD is a process focusing on usability throughout the entire development process and further throughout the system life cycle. The key principles of UCD are as follows: user focus, active user involvement, evolutionary system development, simple design representations, prototyping, evaluation of use in a context, holistic design, process customization (Gulliksen *et al.*, 2005).

Actor Network Theory

Actor network theory (ANT) was originally developed by Latour and Callon to describe the creation and evolution of socio-technical networks and was further extended to focus on the dynamics of relationships among such actors and networks (Callon & Latour,1981). According to the theory, organizations are perceived as legal entities and constantly changing collections of people, objects, rules, ideas, strategies, legal representatives, and politics. Actors achieve their significance by being in relation to other entities. The ANT theory seems to be valuable to explain the role of the user, who is perceived as the hub surrounded by business managers and IT people. The circumstances influence the user, and on the other side - the user creates the environment through his competencies.

User Experience Design

User experience (UX) design by Unger and Chandler is defined as a creation and synchronization of the elements that affect users' experience with a particular firm, with the intent of influencing their perceptions and behaviors (Unger & Chandler, 2009). Bernhaupt noticed that UX approach focuses on all the qualitative experience a user is making while interacting with a product (Bernhaupt, 2010). The current ISO 20101definition of user experience covers a person's perception and the responses resulting from the use of a product, system, or service.

End User Knowledge Management

End user knowledge management refers to processes that generate and integrate information about end users, about their problems as well as challenges and solutions provided by them. End user problems, incidents and processes for their successful solutions are included in the help desk office system. However, end user knowledge management should be recognized as a key strategic resources in any company's success as well as an integrated management approach and competence, an ongoing process of generating, disseminating and using end user knowledge within a business organization and between an IT organization and its users.

End Users as Innovators

Users as innovators (UaI) benefit from their positive experience that fulfils personal needs and interests. Designing for use and testing by use seem to be essential characteristics of user-innovators. They are motivated by their own desires for a better product. However, there is a risk that the user involvement in the design process will never be properly rewarded and an organization fails to provide a positive user experience, so the negative consequences can occur such as negative publicity and loss of user engagement. Therefore, only through the social interactions, perceived dialogue online, social accessibility, and transparency the value can be co-created. Some initiatives have institutional background involving professional staff, i.e., IT people, others are built on communities of practitioners and rely on their voluntary work.

Contextual Approach

Contextualizing methods choice for research and development has some implications. It is difficult to sustain a model of research as neutral observer. The user's information needs are not satisfied by a single ideal set of documented requirements, but also by the analyses of the context of information searching and computing. Generally, context is perceived as a user-oriented phenomenon that is focused more on users' immediate surroundings than on their inner state. The framework for context consists of five key elements:

- Any goals, tasks, actions or activities associated with what the user is doing;
- Space, location and time;
- Users' physiological conditions, mental state and preferences;
- User's role, status, and relationships with other individuals;