

Organization and Management Issues in End User Computing

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INTRODUCTION

End-user computing (EUC) or as it is commonly termed, end-user development (EUD), is a concept and capability granted by advancement in technology that allows participants in a business environment to utilize information technology (IT) by developing applications of their own. Traditional methodology required a software program to be developed by trained programmers in the analysis and design stages of the systems development life cycle, where a user had to accept the program as an individual entity with unalterable characteristics. EUC/EUD now enables this person to customize the program around his/her specific demands. The framework of EUC establishes empowerment and capabilities so that anyone can develop entire information systems (IS) with little or no help from professional systems analysts or programmers, along with accessing data and creating reports (Laudon & Laudon, 2003). EUC/EUD is a topic in the IT environment that cherishes a progressive history spanning from the mid-1970's to what it is today.

BACKGROUND

During the 1970's, the concept of management information systems (MIS) began which grounded the importance of utilizing IT as a strategic implementation tool in changing business environments. The event produced a two-fold outcome where generalized perceptions about computers changed to include the relevance and effective usage of data to direct most business decisions, and technological ideology shifted from an information specific denomination to a belief towards support management. (Charr, 1988). Once support management became recognized, a paradigm occurred where decision support systems (DSS) became the focal point of MIS integration.

The new paradigm conceptualized the computer as a necessary tool for the decision making process in accordance with its data storing properties.

EUC has become increasingly more available, due to the induction of less complicated programming languages, termed fourth-generation languages (4GL's), that provide users who may not have a sufficient skill and knowledge of programming expertise, to develop programs, customized to their individual needs. These specific languages signify simplicity, since most users already have an intuitive understanding of the logic and terminology. They are frequently referred to as user-friendly and nonprocedural, which determines that the languages must be given less structured instructions to achieve the same result as earlier capabilities (Charr, 1988). Their relevance to EUC is significant because earlier languages, such as assembly or procedural language, required a high level of education to interpret the meaning of codes and to produce the desired outcome with the program.

From a technology perspective, when the last three decades are crucially examined on how EUC has gained its prominence today, three defining events are attributable for this outcome (Charr, 1988). First, is the success of computer engineering to derive programs which grant users, whom are not skilled computer programmers, to manipulate and maintain the software; second, computer training is now a skill that everyone must have to enter the job market, so everyone must demonstrate proficiency in this area; third, the huge growth in the evolution of the use of computers has drastically decreased costs of hardware and software (Charr, 1988). When these three forces are evolved, it is obvious how EUC has radically gained in recognition and how progressive computer technology has grown to what we know and use today.

The computer has developed into a commodity as common as any household item, like the food processor or even the vacuum cleaner. Despite slightly higher costs,

people all over the world are finding the investment increasingly beneficial. The number of things one can accomplish in the comfort of one's home, even with a little PC, is incredibly large. Hence, it is no surprise that the term EUC has earned its position in the world of computer jargon.

Management Issues of EUC

Even with the popularity of EUC, the greatest debate substantiated through this capability is: how much will a business benefit from this process, and can certain disadvantages be posed to limit the effectiveness of EUC implementation? This paper is structured to further provide a background on the evolvement of EUC, based in part on research conducted by Brancheau and Brown (1993), to establish a framework which will finally provide the necessary information and address important management issues and perspectives on EUC.

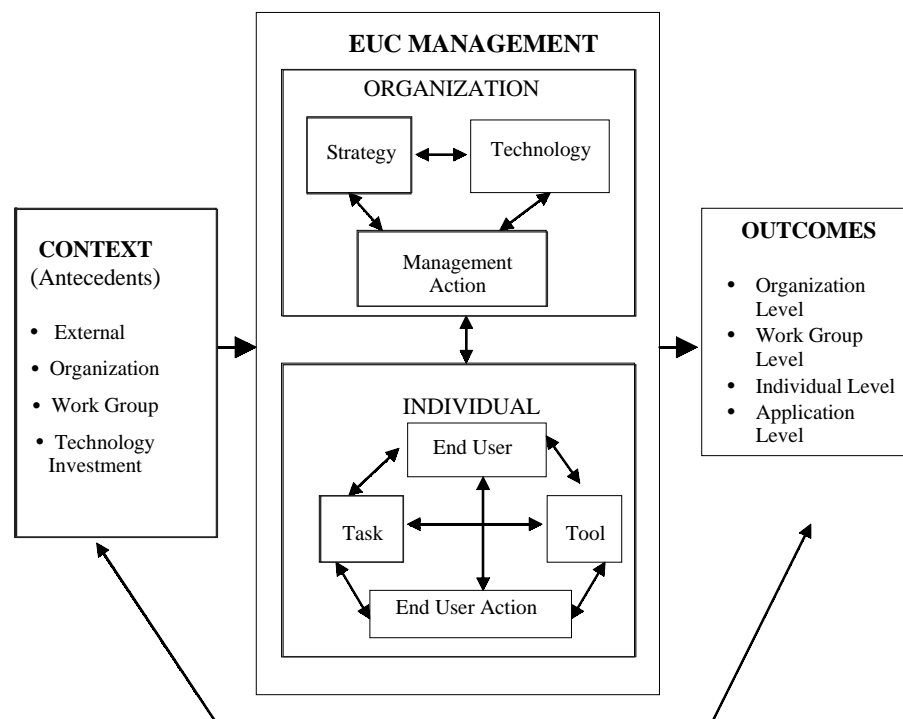
EUC Management Model

EUC can be defined as "the adoption and use of IT personnel outside the IS department to develop software applications in support of organizational tasks" (Brancheau & Brown, 1993). The content of Brancheau and Brown's study was generated from different journal

articles and upon conclusion of their findings they developed a model, incorporating all of the aspects identified with EUC (see Figure 1).

The model includes three major components: antecedents (contexts), behavior (EUC management) and consequences (outcomes). EUC management is further divided into two customized sections, organizational EUC management and individual EUC management. The organizational part of the model represents the planning, organizing, staffing, directing, controlling, supporting, and coordinating functions associated with EUC management. As the model depicts, three relationships occur involving strategy, technology, and management action. Four factors are incorporated within the individual EUC management: the end user, task, tools and end-user action. The antecedents incorporate those factors pertaining to external, organization, workgroup, and technology investment activities as related to the business. Through the integration of EUC, both individual and organizational management styles, four levels of outcomes occur, organization, workgroup, individual and application (Moore & Powell, 2002). With the background pertaining to this model, we propose that four management issues should be addressed: 1) what are the characteristics associated with End-User Computing? 2) what are the necessary tools needed? 3) what are the advantages gained through EUC? and 4) what are the possible risks and security issues associated with EUC?

Figure 1. EUC Management Model



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