

Adaptive Learning Systems: A Model for Business Entrepreneurs to Implement IT

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Adaptive Learning Systems [ALS] have garnered tremendous attention in recent years from academia, practitioners and trade press [Jennings et al. 1998; Nwana 1996]. The numerous agent conferences and World Wide Web agent sites developed lately evidence this prevailing trend [Murch 1999; <http://www.agentlink.com>]. ALS are part of the agent paradigm 'invading' the research world that provides new ways of analyzing, designing and implementing complex software systems [Jennings et al. 1998]. Although varied in description, these systems are characterized by behaviors that are adaptable (by self-automation of actions) and flexible (by learning the user's preferences, styles, and cognitive levels thereby offering proactive forms of interaction/support). ALS are user-centered, and have the potential to revolutionize the way users interact with computers, overcoming many of the limitations of current systems. A review of the literature indicates that researchers have been complaining about the lack of these systems' use as practical tools for real world problems [Bradshaw 1997; Hook 1996; Jennings et al. 1998; Maes 1994; Nwana 1996]. This dissertation agrees with these researchers and identifies a domain that can significantly benefit from this technology.

The author posits that ALS hold the potential to facilitate the decision-making process regarding Information Technology (IT) implementation. The potential benefits that IT promises business entrepreneurs will compel them to make IT implementation decisions. The decision-making process poses many challenges. Failure to adopt IT or incorrect decisions regarding IT implementation can be detrimental to a business. In short, the decision to adopt IT is weighted, complex, challenging and risky. Technology acceptance has been the heart of research for many years. The Technology Acceptance Model [TAM] and other technology acceptance research postulate and empirically validate that perceptions are key determinants to one's decision regarding IT [Agarwal et al. 1998; Davis et al. 1991; Gefan et al. 1998; Harrison et al. 1998; Moore et al. 1991]. However, simply acquiring the technology is not sufficient in realizing the returns on investments. It has been hypothesized that one of the reasons for the productivity paradox is that systems acquired are never used [Agarwal et al. 1998]. To date, several researchers have studied technology acceptance [Agarwal et al. 1998, Gefan et al. 1998, Iacovou et al. 1995, Igarria et al. 1997,

Karahanna et al. 1999], but there is a lack of research on mediating influences to augment the decision-maker's perceptions [Agarwal et al. 1998, Gefan et al. 1998, Iacovou 1995, Igarria et al 1997, and Karahanna et al 1999]. This study postulates that ALS can be effective tools that mediate the decision-maker's perceptions during IT implementation. Prior research indicates that any decision support tool should be adaptable to the user's preferences and habits [Agarwal 1994, Chaung 1998, El-Najdawi et al. 1993, and Shaw 1993]. ALS have the characteristics needed to develop tools to support the business entrepreneur during the IT implementation decision-making process. ALS are flexible, self-adapting systems capable of accomplishing task on behalf of the user. Consequently, ALS can be used as tools for business entrepreneur's IT implementation decision-making.

More specifically, this research will attempt to answer the following questions:

Will an adaptive learning system [ALS] assist the business entrepreneur in making more effective IT implementation decisions?

What is the framework for a support system to be utilized by business entrepreneurs in making IT decisions?

This research adopts a two-phase approach. (1) Based on a review of the literature a conceptual model of the ALS was developed. (2) An ALS based on the conceptual model will be developed, evaluated and validated. In this study, the researchers will test the effectiveness of an Adaptive Learning System Technology Advisor (henceforth referred to as ALSTA) during the IT implementation decision-making process. The results will be empirically tested by laboratory experiment. Validation will follow steps outlined by Straub [1989] to ensure ALSTA is reliable and robust tool. The constructs for measurement to be used during the experiment will be developed from prior empirically validated research.

This research hopes to contribute to the following areas of research: theories and applications of software agents; and IT implementation.