Thomas Kramer

Assessment of the commercial applicability of artifical intelligence in electronic Businesses

Diploma Thesis

Examicus

EUROPEAN BUSINESS SCHOOL
Schloß Reichartshausen am Rhein

Diploma Thesis

In Order to Receive the Academic Degree
Diplom-Kaufmann

Assessment of the commercial applicability of artificial intelligence in electronic businesses

Name: Thomas Kramer

Due Date: 25.02.2002

To mum and dad

Table of contents

List of tables

Table of figures

Table of abbreviations

ACL	Agent Communication Language
ACM	Automated Collaborative Filtering
AI	Artificial Intelligence
B2B	Business-to-Business
B2C	Business-to-Consumer
C2C	Consumer-to-Consumer
CAS	Computer Aided Selling
CBB	Consumer Buyer Behaviour
CRM	Customer Relationship Management
ECCMA	Electronic Commerce Code Management Association
FAQ	Frequently Asked Questions
FIPA	Foundation of Intelligent Physical Agent
IT	Information Technology
KIF	Knowledge Interchange Format
KQML	Knowledge Query Manipulation Language
ODB	Online Dynamic Bidding
OPS	Open Profiling Standard
SFA	Sales Force Automation
SRM	Supplier Relationship Management
SWOT	Strengths, Weaknesses, Opportunities & Threats
UCEC	Universal Content Extended Classification
UN/SPSC	Universal Standard Products and Services Classification
W3C	Word Wide Web Consortium
WWW	World Wide Web

1 Introduction

1.1 Problem Statement

Artificial intelligence has already been applied to many areas since its official birth in 1956, but most of the applications ended up in great disappointments as the benefits they reaped were very low (Andriole & Hall, 2000, p.17). Due to this reason the vast interest in applying this relatively young technology to business calmed down in the late seventies when scientists recognized that the current intelligent systems were not yet plug-and-play solutions, hence mature enough to fully meet the business needs and requirements at that time.
However, the limited commercial applicability of artificial intelligence in the past has to be rethought today as with the significant progress in artificial intelligence research and the growth of electronic commerce conducted over the World Wide Web new opportunities for business applications of artificial intelligence have emerged consequently. Nowadays horizontal and vertical electronic commerce is significantly driven by intelligent applications. Their employment in electronic businesses "may well generate huge returns on investments, providing a technology-based response to increasing competition, the volatility of business models, and the pace of technology change" (Andriole & Hall, 2000, p.18). Despite the wide assumption that artificial intelligence will have a major impact on Internet-related businesses today and especially in the next years to come, it is uncertain to what extent it performs and will perform that way.

1.2 Scope of the thesis

The purpose of this thesis is to analyse, assess and evaluate the potential of commercial applications of artificial intelligence in electronic businesses. Therefore the main research question of this paper is whether artificial intelligence is reasonably applicable in Internet-related businesses, first in terms of effectiveness and second in terms of efficiency. In the assessment the application of artificial intelligence in electronic businesses is represented by the employment of intelligent agents.
In harmony with the major research question emphasized above, the paper provides a thorough discussion about the economic impact of the most common and relevant application types of intelligent agents on electronic commerce environments. In addition the driving underlying technologies of intelligent agents are analysed with respect to artificial intelligence techniques and methods, and current standardisation efforts.
The assessment itself constitutes of theoretical and practical instruments that measure the commercial applicability of artificial intelligence in electronic businesses. First, the effectiveness of employing intelligent agents will be measured with a cost-benefit analysis to prove whether it is the right thing to do for an electronic business. Second, the efficiency of such an application will be assessed with a detailed SWOT-Analysis in order to determine whether employed agents do their job right. Finally, the results from a range of expert interviews with dominating developers in the field of intelligent systems technology will be integrated into the assessment. Expert interviews as a research method seem to be appropriate for this assessment as they investigate