

Integration of Artificial Intelligence into Business Process and its Impact on Organisational Performance: The Case of UBA, Asaba Branch

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Abstract

Artificial intelligence is facilitating the resolution of complex problems in computer science, operations research, telecommunications, software development etc. The purpose of this study is to examine the integration of artificial intelligence into business process and its impact on organizational performance, the case of UBA in Asaba. A survey research design was adopted. A simple random sampling technique was used to select about 28 respondents for the study. A questionnaire was the instrument for data collection. Relevant literatures were reviewed which guided the objectives and methodology of this study. The study found out that the relevance of artificial intelligence include that it makes life easier; it is faster than human action; it makes the organization conform to global trends and it helps in improving productivity. The study also revealed that the integration of artificial intelligence into business process and its impact on organizational performance is very effective.

Introduction

The 21st century is witnessing the re-invention of Artificial intelligence. This is due to advances in computer science, the need for the processing of large amount of data and theoretical knowledge of the operation of computer power. Currently, artificial intelligence is facilitating the resolution of complex problems in computer science, telecommunication, operations research software development companies and many more (Murphy and Brown 2020). The essence of artificial intelligence was to simulate the human intelligence. It is believed that the human intelligence can be described in such a way that artificial intelligence could carry out the same functions. According to computer scientist, artificial intelligence is the intelligence which is demonstrated by machines as against the intelligence demonstrated by humans and animals which is also referred to as machine intelligence. It is the study of intelligent agents or devices which can accept information from the external environment interpret it and utilized the information to achieve a particular result. Kaplan and Haenlein (2021) posit that AI is a system which has the ability to interpret external data, use the data to learn and solve problems. It is the machine which can carry out the cognitive functions of humans. Artificial Intelligence (AI) has moved from research laboratories into business. Recent surveys indicate that a large number of companies have developed AI applications in the last two years and the growth of applications continues today (Komel, 2020; Francett, 2021). Many of these applications are stand-alone systems, but others are integrated with more traditional Information Systems (IS), such as data-processing and Management Information Systems. Most applications are knowledge-based Expert Systems (ES), but there is a growing number of applications of other AI technologies, such as neural networks, knowledge-based planning and scheduling systems, speech-synthesis systems and voice-recognition systems Murphy and Brown, 2022). The invention and adoption of artificial intelligence requires the commitment of huge funds. Also, there are fears that unlike previous technological revolutions, it will create a risk of mass unemployment, high cost of business operations,

lacks creativity and cannot improve with experience. Furthermore, despite the proliferation of the technology, there is still no empirical work in the literature that shows that managers, business owners and employees understand much about the practical issues associated with the interaction of AI and organizational performance. This study therefore focused to examine the integration of artificial intelligence into business process and its impact on organizational performance. The study is structure to answer the question: What is the relevance of artificial intelligence in business processes and organizational performance?

Conceptual Review

The Impact of AI on Organizations

According to Thomason (2015), some of the effects of AI on organizations include but not limited to: reassignment of decision making responsibility; cost reduction and enhanced service; and personnel shifts and downsizing. Here we review these conspicuous effects, recognizing that there are many others.

Reassignment of Decision-making Responsibility

AI has the ability to change the ownership and responsibility for decision making. An example of this is American Express's Authorizers Assistant, an ES that handles the vast majority of requests for expenditure authorization made with the American Express card. The system allowed American Express to automate much of its credit authorization responsibility, removing the ownership of the decision from human authorization clerks. In the area of personal loan and credit analysis, neural networks are now being used by many major credit card companies, including Citibank and General Electric Financial Services, to perform some of the credit-granting decision making. Corporate secrecy means that details about these systems and their use are scarce.

Cost Reduction and Enhanced Service

Implementation of AI systems can help reduce costs, enhance a service provided by the organization, or do both. In addition to automating authorization decision making, the Authorizers Assistant has allowed American Express to greatly reduce labor costs and better manage its provision of a card with no fixed limits. These types of business benefits are now more acclaimed by management than the conventional benefits (including reduced decision making time, better use of expert time and codification of knowledge).

User Incentives to Adopt AI

As with other types of IS, AI systems are unlikely to be used if users do not have an incentive to adopt them. CLASS (Commercial Loan Analysis Support System) provides commercial loan officers with support to evaluate a company's financial position, recommend loan covenants and document the commercial loan analysis. Although the system demonstrated technical expertise, it provided few incentives for loan officers to use the system. CLASS required loan officers to use computers in their problem solving and this did not fit with the corporate culture that precluded the use of computers in a loan officer's office. Moreover, the loan officers never developed a personal stake in the system. The system confirmed their opinions, but never demonstrated personal gains for the loan officers, even though they agreed that the system would help them avoid bad loans. These factors had a significant impact on their tacit decision not to use the system (Duchessi and O'Keefe, 2022).

The Impact of AI on Management

Focusing on ES for the moment, ES that result in product/service differentiation and/or cost reduction have a direct impact on management strategies for gaining competitive advantage. With some ES, management can take offensive or defensive actions for coping with competitive forces and create a defensible position for the company. The strategies need not be limited to just products, but can include other actions, such as the development of a well-trained workforce (Avron and Edward 2020).

Products

Perhaps the most prevalent examples of using AI for product differentiation are Expert Configuration Systems, which take a product specification or description and generate a parts list and instructions for putting the product together. The father of such systems, XCON, has been written about extensively. Similar examples outside the computer industry include Carrier's EXPERT system, which produces designs for large complex air-conditioning units for multi-story buildings, and General Electric's Computer-aided Requisition Engineering (CARE) system, which allows salespersons to search a database for electric motors that meet customer specifications, or automatically design a new motor if there are no existing ones (John McCarthy 2018). These systems result in fewer engineering errors, reduce base costs and reduce cycle time. However, the major impact is the company's ability to offer (in the words of Digital) *à la carte* manufacturing to its customers, who no longer have to choose a model with a few options because they can specify what they want and have it made just for them.

Workforce

For many service organizations, maintaining and effectively using a skilled workforce is crucial to profitability. For example, public accounting firms must disseminate changes in tax and accounting information to each of the accountants that perform those activities. Coopers and Lybrand's Exper Tax system guides accountants through the information-gathering process and helps them explain differences between statutory and effective (or computed) tax rates (Shpilberg and Graham, 2019). The system notes relevant issues, describes the importance of information requested and analyzes it to identify critical issues for audit and tax managers. Willingham and Ribar (2018) consider auditor training to be a primary benefit of ES. These types of systems can reduce labor costs, increase accuracy and provide product differentiation for basic 'vanilla' services, especially when the customer has little marketing information to differentiate providers.

Improving organizational performance

Organizations facing a flat and unchanging environment may not need much intelligence, but organizations facing diverse and turbulent environments may need much higher degrees of intelligence. To the extent that organizational intelligence costs something to develop and maintain, this investment may be justified in the latter case, but not in the former case. But there is a widespread belief that there is a universal trend away from flat and unchanging environments towards diverse and turbulent ones, and this seems to entail a greater overall need for organizational intelligence. Improvements in organizational intelligence are generally both possible and desirable. The benefits of such improvements are manifold. The organization is likely to become more successful in the short term, and have greater prospects for survival and growth in the longer term. Staff morale is likely to improve, and the individual employees will themselves have greater opportunities for personal growth and fulfilment. In the broader socio-economic system, intelligent organizations will create more wealth, not merely economic wealth but in human potential. In order to increase intelligence, people should first try to eliminate what hinders the intelligence of an organization. Lack of intelligence is not about making mistakes, but repeating them.

Theoretical Review

Computational Organization Theory

Empirical Studies

There are a few empirical studies on AI, management and organizations, and the existing studies focus on where and how the technology is being used in the marketplace. Generally, consulting firms and AI vendors perform the surveys to determine the extent of AI development and usage in organizations, and thus follow quite narrow research perspectives. Here we briefly summarize two typical academic studies.

Pickett and Case (2019) surveyed R&D professionals on AILES applications in R&D. The survey revealed that companies with the resources to deploy the technology are doing so very cautiously, and view the technology as a means to capture irreplaceable expertise and improve control over complex systems. Additionally, the respondents identified several impediments to using AI and ES, including selling management on the value of the technology, development of a knowledge base and lack of suitable development tools. The small sample size (33 responses) limit the study's value.

Doukidis and Paul (2018) performed an empirical analysis of the application of AI techniques among members of the UK Operational Research (OR) society. The study's findings include: professional and organizational motivation is the main reason for using AI; other departments within an organization approach OR departments for AI development, demonstrating the success of some OR departments at appearing to be innovative; and ES are the major AI technique employed because of their cost-effectiveness. To date, empirical studies have been descriptive rather than inferential in nature. Few studies are conceived as well-defined research projects to test propositions and theoretical models that emerge from careful analysis of the extant literature or case studies. However, the excessive cost, time and difficulty in obtaining a representative sample are strong constraints to performing an empirical study.

Research Methodology

In this study, a survey research design is adopted. Survey is chosen based on the objectives of the study. Survey is defined according to Nworgu (2005) a survey studies the sampling of individual units from an already known population and its associated survey data collection techniques, such as questionnaire construction and methods for improving the number and accuracy of responses to survey.

The study made use of primary source of data. Concerning the primary source, questionnaire was used to gather the data. The questionnaire was a four-point rating scale (Likert scale), starting from strongly agreed (SA), agreed (A), disagreed (d), and strongly disagreed (SD). The questionnaire was designed in such a way that every question in the questionnaire was related to the research questions and hypothesis of the study. Also the result was used to answer the research questions,

A mean score rating method was used to analyses the data based on the 2.5 acceptance region format to answer the research questions

PRESENTATION AND ANALYSIS OF RESULTS

This section presents the results of the field study; it shows the descriptive information of the respondents, the results of each of the research questions.

Responses of the respondents on the relevance of artificial intelligence

S/N	Statement	N	Sum	Mean	Std. Deviation
1	It makes life easier	28	94.00	3.3571	.48795
2	It is faster than human actions	28	84.00	3.0000	.81650
3	It makes the organization conform to global trends	28	65.00	2.3214	1.24881
4	It prevents fraud in the accounting system	28	64.00	2.2857	1.27242
5	It helps in improving productivity	28	74.00	2.6429	.95119

From the responses of the respondents above, we can infer that the relevance of artificial intelligence include that it makes life easier; it is faster than human action; it makes the organization conform to global trends and it helps in improving productivity. All these are as agreed by the majority of the respondents, while majority of the respondents fail to agree on items 3 and 4 in the table.

How will you appraise the integration of artificial intelligence into business process and its impact on organizational performance?

	Frequency	Percent	Valid Percent	Cumulative Percent
Very effective	28	100.0	100.0	100.0
Total	28	100.0	100.0	

From the responses of the respondents as indicated on the table above, we can infer that the integration of artificial intelligence into business process and its impact on organizational performance is very effective. This is as agreed by all the respondents for this study.

What are the impacts of UBA virtual Banker-Leo on organizational performance?

Responses of the respondents on the impacts of UBA virtual Banker-Leo on organizational performance

S/N	Statements	N	Sum	Mean	Std. Deviation
1	It improves productivity	28	66.00	2.3571	.48795
2	It leads to improved customer satisfaction	28	67.00	2.5001	.47559
3	It improves the bank's performance	28	64.00	2.2857	1.27242

	greatly				
4	It increase the speed of banking transaction	28	65.00	2.3214	.47559
5	It improves the global acceptability of the bank	28	84.00	3.0000	.81650
	Valid N (listwise)	28			

From the responses of the respondents above, we can infer that the impact of UBA virtual Banker-Leo on organizational performance include that it leads to improved customer satisfaction; leads to improved productivity; it increases the speed of banking transaction and it improves the global acceptability of the bank. All these are as agreed by the majority of the respondents.

Summary

This study tried to assess the integration of artificial intelligence into business process and its impact on organizational performance, a case study of UBA virtual banker- Leo in Asaba Metropolis. The study was set to address three objectives which include:

- i. To determine the relevance of artificial intelligence.
- ii. To appraise the integration of artificial intelligence into business process and its impact on organizational performance.
- iii. To determine the impact of UBA virtual Banker-Leo on organizational performance.

Based on the objectives above, the findings of the work include the following:

- i. That the relevance of artificial intelligence include that it makes life easier; it is faster than human action; it makes the organization conform to global trends and it helps in improving productivity.
- ii. That the integration of artificial intelligence into business process and its impact on organizational performance is very effective.
- iii. That the impact of UBA virtual Banker-Leo on organizational performance include that it leads to improved customer satisfaction; leads to improved productivity; it increases the speed of banking transaction and it improves the global acceptability of the bank.

Conclusion

The purpose of this study is to assess the integration of artificial intelligence into business process and its impact on organizational performance, a study of UBA in Asaba Metropolis. In this study, a survey research design was adopted, the population comprises all the staff of UBA, Asaba. A simple random sampling technique was used to select about 28 respondents for the study. A questionnaire was the instrument for data collection. Relevant literatures were reviewed which guided the objectives and methodology of this study. As result of the field study and analysis of results, the following findings were made:

- i. That the relevance of artificial intelligence include that it makes life easier; it is faster than human action; it makes the organization conform to global trends and it helps in improving productivity.
- ii. That the integration of artificial intelligence into business process and its impact on organizational performance is very effective.

- iii. That the impact of UBA virtual Banker-Leo on organizational performance include that it leads to improved customer satisfaction; leads to improved productivity; it increases the speed of banking transaction and it improves the global acceptability of the bank.

Recommendations

Following the analysis of the research topic, the researcher has come to the conclusion that the following actions in the form of recommendations can adopted:

- i. Artificial intelligence units should be created in banks for effectiveness.
- ii. The system must be secured to guarantee customers confidentiality and minimize fraud especially with respect to online payment.
- iii. Proper monitoring and control of the system must be put in place such as collection of relevant information about users in order to evaluate usage and address challenges faced and also provision of data validation mechanism as is the case with smart systems.

References

- Avron Barr and Edward A. (2020) The Handbook of Artificial Intelligence Feigenbaum (Stanford University)"Artificial Intelligence" Internet Encyclopedia of Philosophy
- Doukidis, G.!. and Paul, R.J.(2018) A survey of the application of artificial intelligence techniques Journal of the Operational Research Society, 41(5), 363-75.
- Duchessi, P. and O'Keefe, R.M.,(2022) 'Contrasting successful and unsuccessful expert systems', European Journal of Operational Research, 61(112), 122-34.
- Duchessi, P. and O'Keefe, R.M., 'Understanding expert system's success and failure', Working paper, Decision Sciences and Engineering Systems, Rensselaer Polytechnic Institute, 'Building theories from case study research', Academy of Management Journal, 14(4), 532-50.
- Francett, B. (2021) 'AI goes mainstream', Computerworld, 25(30), 59-60.
- Halal, W. E. (1997) Organizational Intelligence: What is it, and how can managers use it?, Retrieved 12 August 2007 from <http://www.strategy-business.com/press/16635507/12644>
- John McCarthy (2018) What Is AI? – An introduction to artificial intelligence—
- Komel, A Kwon, T.H. and Zmud, RW. (2020), 'Unifying the fragmented models of information

systems implementation', in Boland, R.J. and Hirscheim, R.A. (eds), *Critical Issues in Information Systems Research*, John Wiley, New York, pp. 135-56.

Meyer, M.H. and Curley, K.F. (2018), 'Putting expert systems technology to work', *Sloan Management Review*, 32(5), 21~31.

Murphy, D. and Brown, C. (2020) 'The uses of advanced information technology in audit planning', *International Journal of Intelligent Systems in Accounting, Finance and Management*, 1(3), 187-94.

O'Leary, D. and Turban, E., (2016) 'The organizational impact of expert systems', *Human Systems Management*, 7(1), 11-19.

O'Leary, D. and Watkins, P., (2018) 'Internal auditing and expert systems: technology adoption of an audit judgement tool', unpublished paper presented at the National Meeting of the American Accounting Association.

O'Leary, D., Rebne, D. and Chung, Q. (2020), 'The impact of expert systems in accounting: system characteristics, productivity and work unit effects', *International Journal of Intelligent Systems in Accounting, Finance and Management*, 1993, this issue.

Pickett, J.R. and Case, T.L. (2020), 'Expert systems and artificial intelligence', *Research-Technology Management*, 33(3), 35-8.

Reitman, W. and Shim, S. (2021), 'Expert systems for evaluating business opportunities: implementing the management advisor at Krypton Chemical', *International Journal of Intelligent Systems in Accounting, Finance and Management*,

Rzevski, G. (2022) *Knowledge Management Fundamentals*, MADIRA Paper 025, Version 1.0, <http://www.brunel.ac.uk/research/madira/papers/p25.pdf>.

Sharma, R.S., Conrath, D.W. and Dilts, D.M. (2021), 'A socio-technical model for deploying expert systems - Part I: The general theory', *IEEE Transactions on Engineering Management*, 38(1), 1991, 14-23.

Shpilberg, D. and Graham, L.E. (2020), 'Developing ExperTAX: an expert system for corporate tax accrual and planning', in Vasarhelyi, M.A. (ed), *Artificial Intelligence in Accounting and Auditing*, Markus Weiner, New York, pp. 343-72.

Thomason, Richmond. (2015) "Logic and Artificial Intelligence". In Zalta, Edward N. Stanford Encyclopedia of Philosophy

Tony Benedict (2013}. *BPM CBOK Version 3.0: Guide to the Business Process Management Common Body Of Knowledge*. CreateSpace Independent Publishing Platform,

Veryard Projects Ltd. (2004) Towards organizational intelligence, Retrieved 12 August 2007
from <http://www.users.globalnet.co.uk/~rxv/kmoi/orgint.htm>.