# Artificial Intelligence in Business Process Improvement


## Abstract

The essay defines Artificial Intelligence and Business Process Improvement and then discusses the benefits and challenges of AI in BPI using Google Analytics and Kensho as examples. The essay discusses the implications involved in process automation and the low interpretability of AI's decision making, and then the implications within the context of the Accounting profession. AI within BPI is found to be more efficient, but their decision-making techniques are still not fully understood, meaning human intelligence still has its advantages over AI.


## Introduction

This essay discusses the role and importance of Artificial Intelligence in Business Process Improvement. First, I will define Artificial Intelligence (AI) and Business Process Improvement (BPI) and discuss their related importance. Second, I will analyse the role of AI in BPI activities, the different ways AI can be used by an organisation and discuss how AI can be used to improve business processes. Third, I will identify and evaluate implications of AI for contemporary organisations. Finally, I will reflect upon how the use of AI in business processes relate to my future career path, and the implications it will have on my preferred career.

## Background

### Artificial Intelligence

Definitions of intelligence are constructed around human intelligence and has impacted the development of AI. Intelligent means to be able to think, understand, perceive, learn, predict, and manipulate a system (Russell & Norvig, 2016), therefore, AI is the science of creating machines to imitate human intelligence (Wang, 2012). However, in order for a machine to be suitably 'Intelligent', it is expected to contain functions that ensure it is easier to use, more efficient, or more satisfactory than any existing cognate system at the time (Sun, Sun, & Strang, 2018).

### Business Process Improvement

Business Process Improvement (BPI) is a structured, cross-functional, and analytical continuous improvement of processes through a range of management steps (Trkman, 2013), created to oversee work performance and ensure consistent outcomes, as well as take advantage of improvement opportunities. BPI is imperative in reaching higher quality and efficiency (Mefford, 2009). There are various approaches for BPI such as Total Quality Management, Six Sigma, and Lean (Pepper & Spedding, 2010).

### The Importance of AI & BPI as Related Topics

Business process management and improvement link to Information Systems (Groznik &

Maslaric, 2010) that facilitate steps within a business process. Within a business context, AI has the ability to enhance features, functions, and performance of products, optimise business operations, make better decisions, and reduce labour through task automation (Davenport & Ronanki, 2018). In a business environment that relentlessly fluctuates, businesses must adjust to persistent technological, organizational, and political changes (Zellgner, 2011). AI in BPI is utilised to increase the effectiveness and efficiency of business processes required to compete in such an environment.

### Artificial Intelligence in Business Process Improvement

AI plays an essential role in multiple levels of business processes through the use of its data processing and analytical technologies, which have been amalgamated into the top commercial business information platforms offered by IBM, Oracle, Sap, and Microsoft (Sallam et al. 2011) of data marts and tools for extraction, transformation, and load, which is essential for converting and integrating enterprise-specific data (Chen, Chiang, & Storey, 2012).

There are multiple ways AI can be used to facilitate and improve businesses processes. Businesses adopt arithmetical analysis and data mining systems for data segmentation and grouping, anomaly detection, association analysis, classification and regression analysis, and prognostic modelling in countless business functions (Chen, Chiang, & Storey, 2012). For example, Google Analytics can track a user’s online activities to reveal their browsing and purchasing patterns, which can be used to optimise product placement and recommendations (Chen, Chiang, & Storey, 2012).

## Implications for Organisations

### Process Automation

Machines are becoming dramatically superior at performing routine tasks, outperforming humans for far less money (Baker, 2018). Process automation works through mimicking a human inputting and consuming information, which can either free up a human worker to be more creative (Davenport & Ronanki, 2018), or outright replace them.

An example of AI automation is Kensho, a system that analyses a vast number of datasets to stipulate predictive analysis for investors, as well as helping investors position themselves in response to events that are currently impacting the market (Baker, 2018). It takes the system a few minutes to gather this information, where it would take a human making up to $500,000 a year, days to gather the same information (Baker, 2018).

The strength of automation is the ability to complete work more efficiently and cost effectively. The weakness is that the system can only be used on predictable and routine tasks. The opportunity is that organisations will be able to achieve more with less man power. The threats are that AI could replace humans in such jobs.

### Low Interpretability of Decision Making

Another implication of AI on organisations is the low interpretability of the systems. Neural networks have millions of connections that contribute small amounts to an ultimate decision in

which defy simple explanation, and humans are unsure how systems reach these decisions (Brynjolfsson & Mcafee, 2017). AI deals with statistical truths, rather than literal truths, which make it impossible to prove that the system will work in all situations, especially ones that are not represented in training data, and can be concerning when used for critical purposes (Brynjolfsson & Mcafee, 2017).

Programmers will give an AI a problem without explicit instructions on how to solve it, hoping that the algorithm will use its ‘intelligence’ to figure it out. An ominous example is an algorithm that was supposed to land a virtual plane. The AI figured out crashing the virtual plane would register a force so large that it would overwhelm its own memory and count it as a perfect score, thus ‘solving’ the problem (Thompson, 2018). From the perspective of the programmer, the AI failed, but from the perspective of the AI, it had succeeded.

One of the implications of AI is that there are not enough people with the expertise to comprehend the technology, and the expertise in the technology is expensive (Davenport & Ronanki, 2018). The lack of interpretability of these systems mean that AI will continue to remain unpredictable.

The strengths of AI decision making include it is precise, and deals with hard arithmetical facts, resulting in the most logical outcome. The weaknesses are that the AI can’t give a rationale for their decisions and can become accidentally biased by the data that is given to train the system. The opportunities are that once we can interpret AI decision making, we can utilise it to optimise business processes and lower unpredictability. The threats of AI are that their lack of predictability could lead to catastrophic consequences as a result of its logical decision-making.

### Implications for My Career

My preferred future career in Accounting relies increasingly on BPI and the information systems involved. Accounting has many routine tasks that can be achieved through automation. These tasks include organising data, analysing and summarising transactions, and creating records. These are all tasks that could be handled by the Kensho system mentioned above. There has been limited research investigation the use of AI in accounting, as the complex data analytics are much broader, and research needs to expand accordingly (Schneider, Dai, Janvrin, Ajayi, & Raschke, 2015).

Some AI learning techniques can lead to identifiable and understandable patterns in data, but some patterns are unable to be explained by the AI to the user. The use of AI in accounting depends on accounting decision maker’s willingness to incorporate such analytics in the decision-making process, and how much they wish to accept and rely on the systems (Sutton, Holt, & Arnold, 2016).

## Conclusion

AI and BPI have an interconnected importance within contemporary organisations and have numerous positive and negative connotations that can affect businesses. AI can be used to facilitate or automate business processes through decision making that is not entirely yet, and may never be, understood. AI may have the ability to more efficiently undertake tasks, but they still lack the literal truths required for creative problem with BPI that only humans possess.

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