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AI and automation use cases in IT service management

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Executive summary

"Can the implementation of artificial intelligence and automation help my organization? What are some use cases for adopting these technologies?"

These questions are on the minds of many business leaders that are considering implementing artificial intelligence (AI) and automation solutions. And for a good reason — AI and automation are hot topics for many companies.

But what is the problem that these organizations are trying to solve? What are some use cases that organizations should consider?

This paper explores various use cases for AI and automation that can be used, not only with IT service management (ITSM) scenarios but also within other IT areas. And like with any adoption of technology, this paper highlights issues that organizations must address to have success with AI and automation. Finally, this paper identifies three things that organizations can do to get ready for AI and automation.

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Introduction

Nearly everyone interacts with some AI technology as part of their daily routine.

In everyday life, interacting with AI has become commonplace. Asking a smart device for the current weather conditions, playing music, or updating the grocery list is now second nature to many. Further uses of AI are at work. Trips to the grocery store result in personalized coupons, and discounts based on spending patterns that are automatically sent to an individual's smartphone. Curated playlists, based on an individual's listening habits, result from AI and automation.

But the use of AI is not limited to personal productivity, shopping, or entertainment. AI-related technologies and automation are just as rapidly finding use within businesses.

The fundamental value proposition of AI adoption is clear. AI and automation can result in consistency, repeatability, and speed in performing tasks. As a result, AI adoption can free up people's time to do more of the creative, strategic, or more complex work that today often gets ignored or put off. The use of automation and AI is getting a lot of attention within many organizations. The promise of improving efficiency and throughput while at the same time reducing the burden of tedious, repetitive tasks on people's time has great appeal to many organizational leaders.

In fact, according to a recent Gartner survey[1], the number of enterprises implementing artificial intelligence grew 270% in the past four years.

As a result, the marketplace for AI-technologies is continuing to expand at an astounding rate. IDC forecasts[2] that worldwide revenues in the AI marketplace will surpass $300 billion in 2024.

What is 'AI'?

The term artificial intelligence, or 'AI', is often used in multiple contexts. The late Professor Marvin Minksy, considered the 'father of artificial intelligence' and the co-founder of the Massachusetts Institute of Technology' s AI laboratory, defined AI as "the science of making machines do those things that would be considered intelligent if people did them."[3] The term 'AI' is often broadly used to describe many related technologies, such as those below:

Automation
Technology that executes a task with minimal or no human interaction or assistance.

Orchestration
Often conflated with automation, orchestration is automating many tasks together.

Machine learning
Computer algorithms that improve automatically through use and experience.

Virtual assistant
With advanced Natural Language Processing, they interact with users in a more human-like manner, offering higher efficiency and accuracy to complete any given task.

AIOps
The application of big data and machine learning to automate IT operations processes.

Big data
Typically the target of machine learning, big data refers to large and complex datasets that cannot be dealt with using traditional means.

Perhaps the backbone of AI technologies is automation. Automation is a technology that performs defined tasks with minimal or no human interaction or assistance from humans. One type of automation is robotic process automation or RPA. RPA is a rule-based form of business process automation based on the use of bots. Intelligent Automation is another form of process automation that uses machine learning to learn and adapt to real -time conditions. Simply put, automation is often the core element of leveraging AI within an organization.

The use and promise of AI-related technologies are seemingly unlimited. AI-related technologies can be used to deliver faster responses to abnormal conditions, such as an automatic response to an alert. AI can be used to automate and orchestrate the execution of value streams, such as the onboarding of a new employee. AI can even help people make better decisions, because AI can manage and interpret large sets of (often disparate) data, helping people make fact-based decisions.

But perhaps the most significant impact of the introduction of AI within an organization is the fundamental shift occurring in the relationships and interactions between humans and machines. Up until now, this interaction has been characterized as humans supporting machines. This looks like manually inputting data, or manually initiating actions to be carried out by machines. As the use of AI becomes more and more commonplace, this relationship is evolving — machines are supporting humans.

The implications of this shift are significant. It is easy to envision significant increases in productivity, effectiveness, efficiency, and ultimately, profitability within an organization.

But how should an organization get started with AI? How can IT organizations take advantage of AI capabilities? What are some use cases for introducing and leveraging AI within an organization?

Envision significant increases in productivity, effectiveness, efficiency, and ultimately, profitability within an organization.

AI and IT service management

The introduction of AI within ITSM makes several great use cases. As systems have become more complex, with more companies having a greater reliance on computing resources that are provided by third parties, IT service management is becoming a critically needed capability for organizations.

But first, what is ITSM?

Many have the impression that ITSM is just something that a service desk does, or is only pertinent to IT operations. And while an effective service desk and efficient and reliable IT operations are critical for a successful service management practice, good ITSM is much more. ITSM is an organizational capability for delivering or enabling business value and out comes based on the use of technology. IT service management, done well, enables a holistic approach for managing technology to enable the outcomes that result in business value. For some organizations this is a significant redefinition of the term, as those organizations focus only on the IT operational aspects of service management.

The use of AI and automation within ITSM practices are perhaps an obvious use case. These AI and automation use cases can result in immediate improvements with ITSM practices, as outlined in this recent TechTarget article[4]:

Automatic incident categorization using chatbots
Chatbots can be used to determine the categorization of a user-reported issue.

Intelligent assignment of incoming service requests
AI can be used to do initial triage of user issues to assign the issue to the correct groups without having to have humans up front reading the content in the ticket to make a decision.

Automating fulfillment of service requests using automation
Leveraging defined request models, automation can be used to execute the procedures required to fulfill requests.

Concept of self-service:
A concept of 'self-service' can be greatly pushed using chatbots which can significantly reduce the involvement of IT service desk analysts on repetitive tasks to focus on real complex issues.

Getting instant updates:
Chatbots can provide instant updates on the reported incidents or service requests to respective users without navigating through multiple web pages or reports of ITSM systems and save a lot of time.

Service availability:
Chatbots can easily increase the IT service desk coverage to 24x7 and manage non-critical business hours with minimum or zero IT service desk analysts.

Talk to analysts:
Chatbots can automatically (or be requested to) transfer the conversation to an IT service agent for quick support assistance.

Feedback:
Chatbots can help in collecting feedback on the overall conversation quality to improve the service, constantly.

Enhancing the self-service experience using chatbots is a powerful use case for AI and automation. Introducing chatbots for use with a service desk could provide expanded end-user support hours without having to hire or train additional service desk analysts. Chatbots can provide immediate updates to end-users on reported incidents or service requests without the end-user having to search web pages or ITSM systems. If a situation requires human intervention, the chatbot can automatically — or be asked to — transfer a conversation to a service desk agent for assistance.

Implementation of these use cases provides multiple benefits. First, these AI and automation use cases can take advantage of existing ITSM capabilities, like knowledge articles, defined support groups, and request models. Additionally, using AI and automation in these cases increases the effectiveness and speed of resolving issues, expediting the resolution of user issues. But perhaps more importantly, these use cases free up service desk agents to do more value-added work, like resolving more complex issues, identifying and implementing continual improvements, and contributing to the design of new products and services.

But these admittedly IT operations-oriented use cases are just scratching the surface of how AI and automation can further enhance ITSM.

AI and automation can help an organization take a more holistic approach to service management – in fact, using AI technologies to broaden the benefits that result from effective use of service management maybe even more powerful/benefit use cases for AI and automation. Here are two examples:

Closing knowledge gaps

A challenge that many organizations face is how to close gaps be tween the discovery and capture of knowledge and the use of knowledge. The people that design, test, and implement solutions discover and learn a lot about that solution during the development lifecycle — knowledge that could be valuable to support teams or end-users. But that knowledge is often lost due to a lack of time to appropriately document the knowledge.

Further compounding this knowledge challenge is that service desks often create knowledge bases as a defense mechanism to help them respond to user issues rather than as a proactive way to address user issues and queries.

How could AI help? AI and machine learning could be used to capture knowledge as it is discovered or developed. Bots could be used during the development lifecycle to learn what was tested and the results of those tests. During the support lifecycle, AI could be used to correlate disparate data sources, such as prior incident records and chat logs, to learn how particular types of incidents were resolved, and to develop knowledge articles for future use.

Improve problem management practices

Many organizations fail to realize the full benefits of their problem management practices, as those efforts typically only scratch the surface of problem analysis. Part of the reason is that problem analysis is usually based on a small sampling of information for most organizations. This TechTarget.com article[4] describes how AI can enhance problem management practices through advances in big data and analytics, resulting in improved proactive problem management and automated resolution.

AI and automation are also used to detect abnormal behavior that may occur across multiple IT systems and automatically alert IT staff to a problem before an incident has occured.

But AI and automation have far greater application than just with ITSM.

IT automation and AI

Within IT, many think of AI and automation only in terms of enhancing IT operations. But other areas of IT can benefit from the introduction of AI.

Software testing
Creating and using a set of consistent and reliable automated tests provide insights into the quality and confidence that the tested product is ready for release reports this CIOReview.com article[5]. When used with machine learning, these tests can also include the added benefits of using data from current application use as well as past test experience, to create, execute, and interpret tests without human input[6].

Cybersecurity
Cybersecurity is another great use case for the application of AI and automation. As computing systems become increasingly complex, the attacks against them are becoming increasingly complex as well. Automation tools can prevent, detect, and manage many more cyber threats more efficiently than humans. Machine learning helps organizations keep up with the latest threats and automatically evolve alongside ever-growing threat directions to identify and process sophisticated attack methods[7].

Before you begin

While the adoption of AI and automation provides impactful and measurable results, it's not necessarily without challenge. In fact, a survey published in a 2018 HBR article[8] identified the top obstacle to adopting AI is the 'difficulty to integrate cognitive projects with existing processes and systems'. The article also discussed the fear about cognitive technologies — that AI and related technologies will put masses of people out of work.

So, before an organization begins the adoption of AI and automation, there are a few key considerations to help ensure success.

Organizational change
As with any technology project, organizational change is crucial for effective adoption of AI and automation. The adoption of AI will change how people do their jobs and how they interact with technology. And perhaps there will be some job losses as automation takes over certain tasks traditionally done by humans. There will also be those that resist interacting with cognitive technologies. To have success with the adoption of AI and automation, it is important that organizational change programs help usher the cultural shift needed for success. This may include things like regular, formal communications regarding AI strategy, investing in training, explaining how introducing AI helps the company achieve its goals, and addressing the fears or concerns employees may have about AI.

Having a strong and well-planned approach
A strong and well-planned approach to organizational change management is key to overcoming these challenges. Effective and frequent communications are paramount, as people need to understand how AI may impact current work methods and the anticipated benefits. For those affected by AI implementation, designing and implementing training programs that provide the necessary knowledge and skills needed for success is paramount.

Availability of quality data

AI and automation technologies will only act upon the data provided. If that data is of poor quality , then the result from the introduction of AI and automation will also be of poor quality. In other words, the 'garbage in, garbage out' challenge.

Common problems with data used as input to AI include missing values, inconsistency, redundancy, bias, and lack of integration. Good data management practices have a direct influence on the success of AI and automation initiatives. This TWDI.com article[9] describes what organizations must do to overcome data issues that negatively impact AI adoption. Organizations must start 'by identifying what has been done to manage data previously, where it needs to go, and how to get there'. This means developing a strong data quality framework, understanding how data is used, and how it flows through an organization is critical.

Governance

Having an appropriate governance structure is critical for the successful adoption of AI and automation. As with any other technology, organizations cannot follow an 'implement and forget' approach to AI. How should decisions be made in regard to technology purchases, implementation, and maintenance? How does the organization ensure that the outputs delivered from AI and automation comply with policies and regulations? How does the organization ensure that its AI tools have the appropriate access to needed data – and that data is accurate, secure, and trustworthy? The answers to these questions and more are among the reasons why a formally defined approach to governance is needed to ensure that AI delivers the expected benefits to the organization.

Design first

Design is key for success with AI and automation projects according to this recent CIO.com article[10]. Many implementations get so focused on implementing the technology that they ignore critical aspects of design. Analyzing the operating model, determining which tasks to automate first, and ensuring that automation integrates or links with existing control points are just as important (if not more important) as configuring the AI software.

Change management is also a critical aspect of design but is often overlooked. AI and automation will not exist in a vacuum, and neither will the processes that are enhanced with AI and automation. Upstream and downstream processes often change with process automation, making change management critical for success.

Getting ready for AI and automation in your organization

AI and automation can have a huge impact on an organization, and the use cases described in this document are just scratching the surface. What should an organization do now to get ready for AI and automation? Here are three things to do:

Define the business case

It's really easy to become enamored with technology, especially leading-edge technology like AI and automation. But don't fall into the trap of investing in technology before clearly defining the business case for that technology. Clearly define the business problem to be solved, the expected benefits, and any risks or obstacles that could impact adoption. More than that, the business case must identify who outside of the IT organization should be involved in AI adoption, and clearly define success criteria in terms of business outcomes and value.

Clean up (or create) those processes[11]

Quite simply, automation works best if there is something to automate. If processes are poorly defined – or worse, not defined – an AI and automation tool has nothing to automate. Audit existing processes, identifying places where human intervention is needed, or activities within the process are needlessly complex, isolated, unclear, or undocumented. Ensure that processes are also producing relevant and meaningful measures. Doing this work now will only help your organization have success with adopting AI and automation.

Identify and map organizational value streams[12]

Make adoption of AI and automation a 'team sport' by identifying and mapping organizational value streams. Mapping organizational value streams pave the path for future adoption of AI and automation in three ways. First, most value streams cross departmental boundaries – mapping those value streams brings visibility into what departments and associated systems are involved. Second, mapping value streams identifies the flow and measurement points from customer demand to fulfilling that customer demand. Finally, mapping value streams will identify opportunities to introduce and drive further AI and automation adoption.

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