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THE CAPCO INSTITUTE JOURNAL OF FINANCIAL TRANSFORMATION

ORGANIZATION

Implications of robotics and
AI on organizational design

PATRICK HUNGER | RUDOLF BERGSTRÖM
GILLES ERMONT

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Implications of robotics and AI on organizational design

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ABSTRACT

Although robotics and artificial intelligence (R/AI) create opportunities to improve operational efficiency within organizations, they are also seen as threats to jobs. The idea that machines can now do what white collar workers have been doing for decades has raised concern, and many are questioning the ability of humans to compete with computers. In this article, we will explain that these new technologies are not only intended to cut costs and headcount in repetitive tasks, but also enable businesses to become even more innovative by refocusing on the strengths of their human workforce.

1. INTRODUCTION

In this article, we provide a different perspective on robotics and artificial intelligence (R/AI) and investigate the implications that these new disciplines will have on organizational design. Our intention is not to undertake an academic analysis of the issues, but to discuss and share our experiences and thoughts in a practical manner with those who are facing these challenges within the business world. To this end, we interviewed several executives at Saxo Bank to gain their perspectives on how robotics is used, its implications on the organization so far, and what they foresee could happen in the future. While we do not claim to have all the answers to the complex questions that R/AI raises, we hope that this article will trigger more forward-looking reflections on their long-term implications.

2. DRIVERS AND CHALLENGES FOR R/AI DEPLOYMENT

An important question that needs to be addressed is: Why are businesses investing in robotics? The financial services (FS) industry has particularly shown an interest. Banks and insurers were among the first businesses to launch large scale robotic process automation (RPA) projects. But why?

The FS industry has, it seems, found in robotics a promising way to further automate activities that were previously only performed, and possible to perform, by humans. While the immediate value proposition focused on operational efficiency, cutting down headcount as manual work is transferred to machines, businesses are now realizing that there is more to be achieved from RPA, be it in supporting scalability or enabling new value adding activities.

Numerous banks have built back office functions using off/nearshore resources and have overlooked how inefficient they were simply by focusing on lower labor costs and relying on human ingenuity to work around complexities in their application and integration architecture.

The recent wave of RPA roll-outs across the industry has been driven by tactical cost efficiency targets, with a strong focus on automating rule-based back office activities. In that context, RPA has been viewed as an alternative to complex IT integration projects and other near/off-shoring strategies.

After all, why spend time and resources re-engineering processes and underlying systems if you can quickly and cheaply fill the gaps with RPA? As once stated by Bill Gates: “The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency.”

The idea that banks could easily replace hundreds, if not thousands, of human workers, or fix a fragmented IT architecture using robots quickly clashed with reality: lack of process standardization, misalignment between business and IT teams, and ever-changing application landscapes are some of the roadblocks that robots have found on their way to operational domination.¹

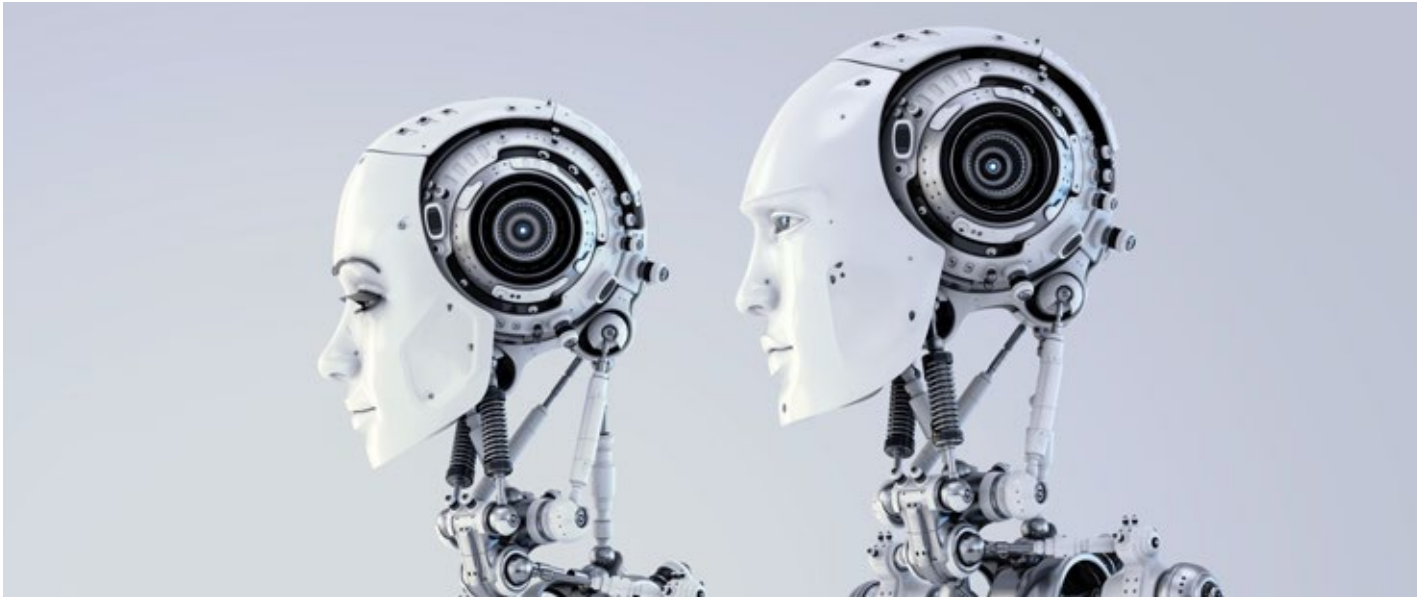
As companies went through the effort of configuring and launching robots, they started to realize that a successful RPA implementation requires a fresh look at how processes are designed, how teams are organized, and even why they have built certain capabilities in the first place.

When it comes to AI, the picture is slightly different. Unlike RPA, the business case for AI is not self-explanatory. RPA is very intuitive to understand and easy to turn into metrics, i.e., I will replace a person performing X tasks per day at the cost of Y per year by a machine performing more of the same tasks at a lower cost. In more ways than one, the case for RPA is process-centric. Not so much for AI.

AI has come a long way since the initial concept was formalized in the first half of the twentieth century. However, we have yet to see a fully functioning general purpose of AI, one that is able to learn to do everything a human does. What we do have, though, are specialized AI and machine learning systems being applied opportunistically to create point solutions.

These are becoming key contributors to decision-making processes, performing analysis that no one had time to perform previously. The business value of such systems lies more in how they help people achieve desired business outcomes than reducing headcount.

¹ The Volume 46 edition of the Journal of Financial Transformation has a number of articles discussing the challenges many organizations face in applying RPA.



Christian Busk Hededal, Saxo's Head of Big Data & AI, states: "With AI and ML, we have three main areas of focus: the AI-based information engine, predictive analysis, and personalized marketing. We want to be able to deliver the right information to the right clients as part of our client service."

The implications of robotics on organizations are already visible, even for companies that have only just started their robotization journey.

As teams are downsized and human points of contact are removed from the process execution chain, one can wonder how team-to-team communication and roles, such as "team lead" or "team manager," will be impacted once large portions of the work is handed over to robots.

In parallel, new roles are emerging, such as developing and monitoring the robots, ensuring synchronization with IT teams, periodically reviewing the robots' output against business expectations, and continuously assessing potential to automate further.

In the short term, accountability of the process managers (PMs) will become even more important. Not only will they be in charge of defining efficient processes, they will also need to ensure that robots are performing the right tasks. PMs will gather and maintain knowledge from across the organization and work with the technology teams to keep tweaking the robots and maximize their utilization.

In the long run, this also creates expectations on people to reallocate their time to more value-adding activities; in a sense moving away from rule-based work to more outcome-based contributions to the business. This is where the challenge lies: how do we find value-adding activities when we have been obsessed with cost cutting?

3. EVOLVING FROM RULE-BASED TO OUTCOME-FOCUSED ORGANIZATIONS

What if everything we do more than once could be handed over to machines?

With the commoditization of robotics solutions, every business will very soon be able to automate most, if not all, of their rule-based tasks. As such, efficient execution alone will not be a competitive advantage anymore. In turn, remaining ahead of the competition will require organizations to focus on desired business outcomes rather than measuring process execution and adherence. This will demand that people pivot to a more outcome-based mindset, using probabilistic tools based on non-absolute truth as opposed to the prevalent rule-based deterministic way of solving problems.

While in the short-to medium-term robotics automation can provide a competitive advantage for businesses that are able to apply it to raise their operational efficiency above their peers, there is little to no doubt that, like other technologies before, it will be commoditized over

time. It will not be too different to the history of electricity. In the early years of the industrial era, factories had to build their own dedicated power plant, however, as electricity production and distribution grew more stable and efficient, it became cheaper and more sensible to just plug into the general grid.

If we try and look to the future, we can easily envision a world where automation is widely available; and we are only referring here to a few years, not decades. Cloud-based robot farms could be accessed on-demand to execute rule-based activities without the need for businesses to spend time and resources building their own internal capabilities.

When the technologies required to remove the human workforce from rule-based activities become widely available, efficient execution will be a commodity and not a competitive advantage anymore.

This model would shift the baseline for competitive advantage. If everything that is rule-based and performed more than once is automatable via robotics, and if the technology to do so is available to all, then businesses must differentiate on something else. Being a bit provocative, efficient execution could be looked upon as an “old world problem,” something that has been solved and can now be taken for granted, the same way that businesses take electricity for granted and do not feel the need to build their own power plants anymore.

In this scenario, businesses will have to compete on new grounds, invest into what we will qualify as “new world solutions.”

And, this is where the real challenge lies for most organizations. Decades of focusing on using rule-based approaches to solve business questions has created biases that are hard to overcome.

Using rule-based deterministic processes (i.e., a set of “if/then” statements using predefined triggers and resulting in a predefined outcome) is comfortable because they are easy to follow, easy to measure and control, eliminate surprises, and are not people-dependent. That is why such processes are the first ones to be outsourced or moved to near/offshore centers and, now, robotized. Reconciliations is a good example of such a rule-based process, starting by identifying differences between bank statements and client records and performing the needed adjustments based on predefined criteria.

This in turn fosters a mindset that focuses on improving existing codified processes that lend themselves quite well to further rule-based optimization rather than exploring new questions that are not so easily solved through a list of “if/then” statements.

Rule-based processes, designed to reach a predefined outcome in a repeatable and controllable manner, put much focus on defining the steps and control points. As routine sets in, people can lose sight of why the process was designed in the first place to focus on repetitive execution and eventually mistake process execution for value creation. One can always fall back on being compliant to justify how one has created value.

“By freeing us from mundane tasks, robotics allow operational staff to focus on adding value to the company.”

Gerard Lelliott, Saxo’s Global Head of Operations

Gerard Lelliott, Saxo’s Global Head of Operations, suggests that “By freeing us from mundane tasks, robotics allow operational staff to focus on adding value to the company by using creativity and lean skills on developing new products and designing better scalable processes, resulting in a better client experience.”

With machines solving old world problems, the real competitive advantage will rely on organizations’ ability to invent new world solutions: new services, offerings, and products built from a customer centric-perspective and freed from the constraints of human execution.

Gerard Lelliott goes on to say that “Most people in the back office would rather be involved in product and process development rather than doing manual processing.”

Looking at your business with a deterministic mindset assumes that you have absolute truths at your disposal. These absolute truths can come in the form of proven facts, such as a change in current interest rate in a given country. But not all information we process is fact-based. A lot of it comes from assumptions, such as expected reactions to the change in interest rate. And for the most part, humans are good at making sound assumptions that turn out to be proven correct, so we tend to deal with these assumptions as if they were absolute truth. However, businesses can come across problems that

require processing an overwhelming amount of facts, or for which making assumptions is nearly impossible. When this happens, we have a natural tendency to deem the question impossible to solve and we move on to simpler ones, ones that we can work out via manageable datasets and assumptions – i.e., old world problems.

Prabhu Venkatesh, Saxo's Head of Data, says: "We need to learn to deal with non-absolute truth and the probabilistic nature of things around us."

Over the years, organizations have been trained to use rule-based approaches to solve business problems and over time it has influenced the type of questions/problems that they put their focus on; filtering out the ones that do not lend themselves very well to rule-based thinking. This is where businesses can miss out on untapped value, by focusing only on problems that are easily solved by rules and absolute truths.

With the advent of AI and machine learning, we can now use machines to support a more probabilistic approach to solving business questions and even start working on problems that we had previously elected to ignore because they would have been too complex/time-consuming to solve. A good example of a problem that does not lend itself well to rule-based analysis is predicting customer behavior. Banks are monitoring customer activities to comply with, for example, AML regulation, capturing massive amount of data that can then be used to better understand customers. So much data is available in fact, that it would be impossible for humans to crunch it into something usable for the business.

Christian Busk Hededal, Saxo's Head of Big Data & AI, says that "Often, it would be far too complex to try to understand our clients by applying a rule-based approach. In the example of fraud detection, it is often subtle correlations in seemingly unrelated data that can make the identification. Here, machine learning is superior."

As a response to that, Saxo has developed a machine learning algorithm to rank leads based on the probability to convert into actual sales, helping relationship managers optimize their time with prospective clients.

As this example shows, AI can create value for businesses by enabling them to be more data-driven, using machines to perform tasks that would have been too complex or time-consuming for humans, removing the need to manually process large data sets and make questionable

assumptions. And in doing so, refocusing the human workforce on doing what it is best at: designing solutions to ever more complex questions through a mix of intuition and sound assumptions – i.e., "new world solutions."

"With AI / ML you don't want to be behind the curve by being under-skilled or not invest appropriately. In the end, you need few but very good people to make it work."

Christian Busk Hededal, Saxo's Head of Big Data & AI

4. RETAINING THE ABILITY TO EVOLVE ORGANICALLY AFTER AUTOMATION

We discussed the value of having access to ever more efficient execution capacity, but what about the ability of a business to evolve and change the way it operates?

Like every piece of technology, robotics works as instructed by humans, which leads to the question of how businesses can keep innovating and improving while relying increasingly on robots. The effort needed to build robotics solutions and the time they free up, create opportunities for the remaining human workforce to build the mindset and methodologies needed to continuously look for improvements and design new value-adding activities.

Unattended robotics automation can act as a fixed prosthetic organ or limb in the way that it is very efficient at executing predetermined tasks in a predetermined way. Over time, an organization can simply forget how the robots work and why they were deployed in the first place. Banks are already facing similar challenges with an aging Cobol developer community retiring, leaving newer IT staff without the knowledge and experience to maintain legacy systems that were built decades ago.

So, how might a company retain its ability to evolve organically while still being a heavy user of robotics solutions?

4.1 Breaking organizational silos

Many of us who work in a computerized environment have been hearing for the last 25 years that the key to sustaining organic evolution is to foster alignment between the business and the technology teams. While that sounds reasonable on paper, traditional IT systems

have been managed as monolithic blocks designed and maintained by dedicated teams. As a result, many companies have built a cultural gap between their business and IT teams, with the latter focusing on keeping the lights on for the former. Robotics demands that these teams work together as closely as possible to ensure that they not only keep up with the evolution of the business, but also foster it.

Patrick Hunger, CEO of Saxo Switzerland, says in this regard that “From an impact perspective, it is less imperative how your organizational setup is intellectually designed. What creates organizational mindshare is ‘human transactions’; all guided by a collective and culturally well anchored business purpose.”

Prabhu Venkatesh, Saxo’s Head of Data, says: “We have a bi-directional, collaborative model, with free flow of ideas and information between tech and business teams. Tech knows what’s possible, business knows what’s useful – magical products are born in that intersection.”

Christian Busk Hededal, Saxo’s Head of Big Data & AI, suggest that “You need to have clear dialogue with IT and business as equal parts of the company. At Saxo, we have decided to have the machine learning and AI development team as an integral part of the business organization to bridge the gap. We have the mentality of being a data-driven organization with close alignment between IT and business.”

Saxo has taken a very pragmatic approach to robotics automation, seeking to learn from the first movers and then carefully plan its journey. An example of that is how Saxo is combining lean methodology as part of process automation work to bridge work across organizational silos and aligning business and IT.

Gerard Lelliott, Saxo’s Global Head of Operations, says that “We don’t want people to think of robotics and lean as two different things, for Saxo they need to be used together to drive our scalability. This way we can build the right mindset to continuously improve.” Nino Adamia, Saxo’s Head of Business Process Management, adds that “Building a lean and improvement mindset is needed to make a robotics initiative efficient. And it also made people generally very positive about robotics.”

4.2 Build a data-driven culture

Robotics technologies can create a data-driven culture for continuous improvement initiatives, enabling the organization to target the right pain points and measure

value from improvements initiatives more accurately. RPA provides detailed, step-by-step execution data, and it is up to the organization to consume this data, creating a constant feedback loop for improvement.

Prabhu Venkatesh, Saxo’s Head of Data, states that “We are using data and analytics to help operations identify bottlenecks in the customer onboarding process, bottlenecks that could hinder growth. We want to avoid piece-wise automation that fragments the work between humans and machines. Automation works best when there are few and clean human-machine interfaces.”

Another effect of robotization is the ability to expose data and KPIs to a wider group of stakeholders. As simple as it sounds, being transparent with execution data creates a common understanding among different teams about what is happening in the company and how everybody’s work impacts it. It helps every single employee to keep the big picture in mind, while becoming more data driven in decision-making. It also creates an outcome-based culture where humans act upon visible issues rather than relying on the process itself.

Prabhu Venkatesh goes on to say that “Data is flying at you through the air constantly, so you might as well do something with it right away, instead of storing now and analyzing later.”

4.3 Set right expectations and commit to it

Roy Amara, President of the Institute for the Future, once said that “We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run”

Like many other technologies before, robotics has set sky-high expectations in terms of what it can achieve. Yet, companies need to acknowledge that it is no silver bullet and that machines and people will coexist for the foreseeable future.

Prabhu Venkatesh stresses that “The ones who have been most successful with AI are the ones who have had the right expectations.”

Companies must learn to use machines for what they are good at, i.e., processing large volumes of data with little judgment. Given the amount of data that we generate every minute of every day, the portion of actual clean and verifiable data that a business can

use has decreased. Machines are perfectly suited to help humans deal with this paradox, as they can quickly reduce the noise and enable people to put more focus on their objectives. In the words of Saxo's Prabhu Venkatesh Head of Data: "Automation is allowing humans to do more of what humans are good at doing."

Christian Busk Hededal, Saxo's Head of Big Data & AI, adds: "With AI/ML you don't want to be behind the curve by being under-skilled or not invest appropriately. In the end, you need few but very good people to make it work."

An example of the above can be found in the automated bond trading system created by Saxo Bank. Saxo's Head of Fixed Income, Simon Fasdal explains: "We are relentlessly removing manual points in the value chain."

The solution created by Saxo uses RPA to replicate everything a trader does in a given market, just much faster and more reliably. Up until now, trading bonds has been mostly a manual affair in a very fragmented and non-transparent market, from the client contacting a trader to place an order, to the trader dealing with brokers, coming back with a price offer until finally the trade is settled. Now, all a client needs to do is place an order in a certain price range and the system autonomously screens brokers to identify the best match on the market with much more transparency and faster execution of orders.

The speed and efficiency of robots now allows bond trading to be almost as fluid as equity trading. As Fasdal states: "The automation of bond trading will impact and change the organizational structure by cutting out excessive touchpoints in the value chain. This will dramatically change the roles and setup of the current teams working in that area. The efficiency of the system is way above that of the manual value chain."

The benefits extend beyond cost efficiency, with reduced spreads, increased transparency and regulatory compliance, and most of all scalability.

Simon and his team are now looking into adding AI and ML components to the system to analyze failed trades and mismatch between clients' spreads and final prices. All of this is done in close collaboration with the IT and operations team to ensure that improvement and innovations can be properly scaled across the organization.

"This is the benefit of our collaborative corporate culture. We work with controlled anarchy," concludes Simon.

5. HARNESSING THE TRANSFORMATIVE POWER OF ROBOTICS AT AN ORGANIZATIONAL LEVEL

Realizing long-term benefits of robotics solutions requires businesses to properly manage the transformation of their workforce, building the internal structures to foster not only robotics adoption but also the need to constantly evolve. As such, one can envision the organization of the future as an environment where humans focus solely on change while everything that is executed more than once is left to machines.

If we pause for a moment and reflect on the topics we have discussed so far, we realize that a successful robotics program looks more like a top-down re-engineering of the organization than a traditional technology or process transformation.

From that perspective, there are key areas that businesses need to address to both navigate the challenges created by robotics and realize the long-term benefits.

Start from the top:

- Leaders need to be fluent in robotics so that they can not only create and advocate a compelling robotics vision and journey for the organization, but also articulate the strategic importance for the enterprise
- Empower robotics advocates who will become the day-to-day change agents.

Establish a robotics change engine:

- Establish a strong governance to manage the delivery of robotics solutions against expected business value and constantly investigate new ways for the business to benefit from robotics
- Challenge the status quo by overcoming organizational and process boundaries that are rendered obsolete by robotics.

Sustain organizational change:

- Support operational managers with the practical methodologies and tools needed for the daily management of a mixed workforce made of both humans and machine. In addition, help managers and staff cope with the anxiety that come with any change
- Involve HR early on to provide recommendations on redeployment of the human workforce.



These topics are nothing new and they are not specific to robotics. They are the recommendations that come with any organizational transformation. We are just stressing the need to look at robotics not only as a change in technology or processes, but a more fundamental change in the organizational design that needs to be recognized as such by the leadership across the business.

Patrick Hunger, CEO of Saxo Switzerland, states that “It is the role of the leadership to consciously design a ‘transactional corporate organism’ that nourishes through inclusion – and not separation – innovation and performance in a human-machine ecosystem.”

Done right, robotics can drive change in all parts of the organization. There is a distinct possibility for the robotics change engine mentioned above to become the actual business of the future: cross-functional teams constantly investigating new ways of creating value for the customers and the company, while leaving the execution to robots.

As we left the trading floor at Saxo, we passed by a team of five or six people engaged in a lively discussion, surrounded by hundreds of computers. Their only tool was a simple whiteboard. To them, technology was for execution and the real value was in generating ideas and co-creating something with their fellow human colleagues.

Patrick Hunger concludes that “When we say that we are a tech company at heart, we mean that technology is the primary instrument for us to put into practice human skills. Technology amplifies our organizational capabilities to the point that size is no longer a limitation. As humans, we aspire to deliver unparalleled market access and services to clients and to become the most professional and profitable facilitator in capital markets, and we are enabled by our confidence in technology.”

We hear about technological singularity, the point in time when AI surpasses human intelligence, fueling all kinds of doomsday scenarios. But what if the actual singularity was something more akin to what we witnessed at Saxo – the moment where technology only serves as a catalyst, leaving us with a renewed confidence in our own human ingenuity. And a whiteboard to express it.

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