

'Leanbotics' Case – Exploring Inclusive Synergies Between Robotic Process Automation (RPA) and Process Improvement

Damian Kedziora
LUT University, Finland
Kozminski University, Poland
damian.kedziora@lut.fi

Dominik Siemon
LUT University, Finland
dominik.siemon@lut.fi

Ramesh Sharda
Oklahoma State University, USA
ramesh.sharda@okstate.edu

Abstract

In the rapidly changing organizations, the importance of inclusive service design is growing, both for external relations and internal communities. In our case study, we explored the synergy between process improvement and automation for the inclusive digital transformation at a large Nordic organization. Merging the governance of Robotic Process Automation (RPA) and Continuous Improvement (CI) programme, by developing a 'Leanbotics' programme allowed for more efficient and engaging experience, by shifting the focus on including everyone in the community. The insights collected qualitatively from the key personnel taking part in the transition uncovered meaningful synergies in the novel value proposition of easily understandable and inclusive service design.

Keywords: Robotic, Process, Improvement, Automation, Inclusive, Service, Design

1. Introduction

The emerging process automation and low-code technologies have triggered dynamic digital transformations (DTs) in many enterprises. The use of technology to support organizational process improvement got proven to bring substantial benefits, if governed properly and inclusively (Alka, 2021). Transformational process improvement can deliver significant benefits for communities and for the business. Methods such as Lean and Kaizen, when effectively managed, can create a learning culture addressing individual and collective needs of employees, management, consumers, and users (Al-Baik & Miller, 2016). At the same time, technologies such as robotic process automation (RPA) and low-code development platforms have in the past few years

introduced new opportunities to enhance the approach to organizational improvement (Elshan et al., 2023; Heuer et al., 2022). Their successful implementation requires careful planning and management, underscoring the importance of governance and engagement of all employees, including 'citizen developers', who can easily develop basic solutions to optimize their processes (Kedziora, 2022).

In the last few years, we have been observing a growing body of information systems (IS) literature examining the use of process automation technologies for organization and process optimization (Sadovnikov et al., 2023; Naqvi et al., 2023; Bock & Frank 2020). Research argues that low-code platforms, including RPA are not radical innovations on their own, but their strength lies in integrating traditional system design components to simplify the implementation of business applications. Such platforms can increase software development productivity, provided that all project requirements are aligned with the predefined framework. The popularity of such platforms provides research opportunities, in areas such as service design, inclusion, and conceptual modelling (Bock & Frank, 2020). A related concept is inclusion - enabling the representation of all citizens and their diverse needs along the whole service design process. We should note that our use of the word inclusive is broader than the typical goal of diversity and equity in a social sense. For example, inclusion can be facilitated by participation in design, data representation or accessibility and digital literacy in developing a service (Young et al., 2021).

The paper describes an exploratory case study where principles of Continuous Improvement (CI) and RPA were applied in an inclusive design of 'Leanbotics' service to achieve operational efficiencies, at the same time generating organizational acceptance. Weber-Lewerenz (2021) highlighted the need of exploring interdisciplinary

cases of sensible and reliable applications of corporate digital transformation. Young et al. (2021) called for future research on dialogue and inclusion that contributes to the growing body of IS. As recommended by Nembhard & Edmondson (2006), the construct of leadership inclusiveness and engagement, require further examination in the quality improvement work with use of technology, from such perspectives and relationships as customer satisfaction, profitability, productivity, and safety. Considering these recommendations and growing importance of process automation technologies for the organizational continuous improvement, the starting point for our exploratory research, was the following question:

RQ: How can organization take advantage of synergies between Process Improvement and Automation to improve its inclusiveness as well as effectiveness at internal digital transformation? Does it make sense to merge these initiatives?

2. Theoretical Background

This section introduces the two streams of work that provided the foundation for our case study and led to the creation of the synergistic term 'Leanbotics'.

2.1. Organizational Process Improvement

Organizational process improvement is an approach of analysing current operations, identifying potential waste in various operational areas, and implementing changes to improve effectiveness and efficiency (Dumas et al., 2013). It is based on the principle of continuous improvement (CI), which refers to the assumption that organizations can always find ways to improve their operations, no matter how well they are performing (Sanchez and Blanco, 2013). Among the various methods and approaches available, Lean and Kaizen are among the most well-known and widely used for process improvement (Helmold, 2020). Lean focuses on optimizing processes by minimizing waste (e.g., reducing time spent on non-value-added tasks) within a system without compromising productivity. It seeks to create more value for customers by using fewer resources, thereby increasing performance and efficiency (Martínez-Jurado and Moyano-Fuentes 2014). Kaizen, on the other hand, is a Japanese philosophy that emphasizes continuous, incremental improvement, focusing on inclusiveness by involving everyone at a given community, from CEO to the assembly line worker (Helmold, 2020) The participation can foster so-called

citizen developers. In a democratized technological access, citizen developers emerge as non-traditional software developers leveraging low-code or no-code platforms (Oltrogge et al. 2018; Kedziora 2022). Their rise is not merely a testament to the proliferation of accessible tech platforms, but a reflection of how empowerment and inclusivity are reshaping the digital transformation landscape. In this context, Kaizen fosters a culture in which all employees are equally and actively involved in suggesting and implementing improvements to company processes (Imai 1986). The persistent application of small, incremental changes often leads to significant improvements across processes and services over time.

However, effective implementation of process improvement strategies, engaging entire community, irrespective of gender, corporate position, race, income or competence level, requires a sound governance structure (Netland and Ferdows, 2014). The inclusiveness must be facilitated by leadership and support culture at an organization (Ashikali et al., 2021). Governance includes the rules, processes, and systems that guide and direct organizational behaviour (Tricker, 2015). In the context of business process improvement, governance ensures the consistent application of these strategies, their alignment with the organization's strategic goals, and the monitoring of their effectiveness. It helps setting parameters within which process improvement initiatives are executed, and it ensures alignment with the overall business strategy (Jeston and Nelis, 2008). The role of leadership in facilitating dialogue and inclusivity in the context of digital transformation is pivotal. Young et al.'s (2021) work delineates the importance of fostering inclusivity. Similarly, Nembhard and Edmondson (2006) accentuate the value of inclusive leadership in orchestrating quality improvement initiatives within technology-driven landscapes. Therefore, process improvement strategies such as Lean and Kaizen should be integrated into the overall governance of the organization (Spanyi 2010, Markus and Jacobson 2010) as well as recognized by company leaders. In this way, organizations can align these strategies with their overall business goals, monitor their implementation, and assess their impact (Netland 2016).

2.2. Robotic Process Automation

Robotic Process Automation (RPA) has emerged as an important and disruptive technology that allowed many organizations to automate their manual processes, formerly executed by human employees (Ruha et al., 2023). This technology offered great promise in releasing human workers from boredom

and allowing them to focus on more complex and value-added activities (Ylä-Kujala et al., 2023). RPA applications that can be classified as low-code solutions involve designing, building, and maintaining a piece of software, commonly referred to as 'software robot' or 'bot' to automate routine, rule-based tasks, that is to become an integrative part of organizational service designs and strategic transformations (Willcocks et al., 2017). 'Robotization' can lead to significant efficiency gains and cost savings, making it a valuable tool for organizational process improvement (Stock and Nguyen, 2019). While majority of implementations have been driven by commercial reasons, such as cost saving, market pressure, improvement potential, processing speed and productivity enhancement, employee empowerment (Kedziora et al., 2021), some non-commercial applications of RPA were also reported, such as healthcare automations in response to COVID-19 pandemic (Kedziora & Smolander, 2022).

In addition, low-code development products, such as RPA, enable rapid development and deployment of business applications with relatively little technical expertise (e.g., coding) (Elshan et al. 2023). Software robots mimic the actions that had been previously performed by human workers, such as clicking, copying, pasting, navigating, sending emails or text messages (Osmundsen et al., 2019). They can process huge number of transactions with minimal error rates, and automated tasks can be very complex, but always need to follow clear rules (Kedziora & Penttinen, 2020). Of course, recent developments such as ChatGPT are adding a potential sea change in such bots.

Automation of processes has been a crucial component of business process management. Originating from the manufacturing, and aiming to increase efficiency, productivity, and quality automation can be supported by process modelling frameworks and continuous improvement, kaizen, and lean initiatives (Kedziora & Kiviranta, 2018). Many implementations of software robots are preceded by the use of process mining tools, which is a technique for gathering data from many systems to better define their contribution and role at an operational value chain (Geyer-Klingenberg et al., 2018). Before we can map and model a new process (to-be), its context, purpose and situation in which the exercise is being carried out should be identified (Imgrund et al., 2018). The improved and simplified processes, with reduced waste can be subject to the modelling practice, aiming at obtaining final process version that works as the basis for RPA (Ivančić et al., 2018).

As we observe RPA solutions to get increasingly involved in performing tasks alongside people, the

expression 'hybrid workforce' started to be used referring to setups where bots and people work together (Cewe et al., 2018). Such hybrid organizing can be perceived as activities, meanings, structures and processes where communities and enterprises combine aspects of various organizational setups (Battilana & Lee, 2014). Transforming onto new models of digital collaborations, companies may apply robotic technologies as part of their hybrid delivery models, combining multiple organizational forms and governance frameworks (Madakam et al., 2019). Nonetheless, ineffective management and approach to the implementation of digital workforce, including issues with inclusiveness and engagement, can result in Robotic Process Re-Manualization (Modliński et al., 2022), where a formerly automated process needs to go back to manual processing.

Technology has increasingly become a cornerstone for improving business processes. However, it is important to note that the successful implementation of these technologies requires careful planning and management (Pereira and Silva, 2012). At the heart of successful organizational transformation lies the ability to coordinate myriad initiatives that, while championed by different stakeholders, ultimately converge towards organizational advancement (Mintzberg, 1979). A blend of Lean principles and robotics automation similarly underscores this needed synchronization, enabling a holistic approach towards achieving organizational goals. Studying the impact of such synergy is the goal of this case study.

3. Method

This section describes the case study. Following the guidelines provided by Benbasat et al (1987), it begins with a description of the organization. Then, we present the implementation of the IS-based innovation and the generalizable lessons learned from this research.

3.1. Case Organization

The company is a leading commodities and retail group, originating from the Nordics, with over 2800 employees in 19 countries worldwide that are serving over 150 000 customers. In 2022, its net sales was 1,246 billion EUR. The transformational exercise described in this work took place at its accounting and payroll delivery unit located in south-western Finland, with over 400 experts and management. The organization has a relatively flat structure, with only 10% of managerial crew, and a long tradition of continuous improvement.

3.2 Case Description and Innovation

One of the authors of this paper worked with this organization as an external consultant, and it spanned several weeks in the beginning of 2023. The case organization prefers to remain anonymous. The original intent of the exercise was to examine how the company has been implementing their continuous process improvement and RPA initiatives. The process entailed a review of all the documentation and interviews with a number of key participants. The general roles of these participants are summarized in Table 1. As the primary goal of the study was to explore new insights on the phenomenon unstudied so far, the authors applied an exploratory approach, focusing on discovery and enhancement of the available practice and theory, rather than testing (Sarker et al., 2019) specific hypotheses. The collected data was analyzed with the reflexive and inductive thematic approach (Braun and Clarke, 2006). After reviewing the documentation and tools used by both continuous improvement (CI) and RPA teams to understand AS-IS practices and potential pain-points, a synergistic approach of integrating the two initiatives was proposed. The approach was presented to all team members through workshops targeted at various team members as well as administrators and C-level executives. The new approach to integrate the two programs (CI and RPA) was implemented for four weeks, at which point a survey was conducted to assess the effectiveness of the new approach. Eight key participants were also interviewed to build a better understanding of the impact of this approach. These steps and the results are detailed in the next section.

Table 1. Interview participants

Informant	Duration	Role
1. Continuous Improvement and Process Excellence Manager	45 min	Accountability for the Process Improvement Programme
2. Continuous Improvement Lead	60 min	Operational management and support at running the Process Improvement Programme
3. Payroll Department Manager	45 min	Accountability for Delivery of Global Payroll Services to entire Group
4. Accounting Department Manager	45 min	Accountability for Delivery of Global Accounting Services to entire Group
5. RPA CoE Director	60 min	Management of the RPA Team and RPA Programme
6. RPA Lead Analyst	60 min	Education about RPA, Reviewing Automation Ideas, Prioritizing Pipeline

7. P2P Senior Expert	45 min	Processing of Procure to Pay cases, Process Development
8. Payroll Key User	45 min	Processing of Payroll cases, Process Development and Ownership

4. Case Findings and Discussion

In this section, we first present and discuss both the continuous improvement (CI) and RPA programmes before transformation, as well as the newly introduced ‘Leanbotics’ programme, from the perspective of employee inclusion and empowerment.

4.1. The CI Programme

The CI initiative has been the internal programme run by delivery departments and has been present at the case organization for a few years, but less than 10 years. It was not possible to determine the precise establishment date, as said by P1: *“When I came to this company 3 years ago, I was told that this CI had been there already for a couple of years, yet the oldest files and PowerPoints related to it I found at the intranet were from 2014”*.

The aim of the programme was not understood equally well by its key stakeholders. It appeared that for the management of lean programme and departments, the key goal was to reduce resources (financial and operational), while the materials stored at its Intranet website entitled ‘CI Corner’ emphasized its benefits and value for every employee, helping to feel better at work, by saving time and effort on everyday tasks. It was reflected in the CI slogan: *“Improve your work and yourself”*. Nevertheless, many of the interviewed employees were not sure why do they need to take part in this initiative. For example, P7 stated: *“We were trying to come up with some cases before the deadline comes, because our Team Coordinator had been asking us for it during our monthly team meetings”*.

When it comes to the generation and management of improvement cases, it was found at CI Corner that some years ago, a few workshops educating about the background and importance of CI were organized, yet according to P1: *“After korona <COVID19 pandemic> we were not given any budget for organizing workshops, so we just recorded some videos and published them on the intranet. However, I am not sure if anybody was watching them afterwards”*. P1, who was the owner of CI initiative was also not checking if all the resources of the CI Corner were accessible by all the workers, irrespective of position and experience. Employees were welcome to submit their cases at the central ‘Lean Register’ that

was stored at CI Corner as an MS Excel file and contained over 20 questions that ‘Case Originator’ (person submitting a case) had to answer. Its goal was to collect the information necessary for P2 to investigate and proceed with the case, such as: Case Originator, Other Case Contributors, Department, Team, Description of idea, Process, Systems Involved, Creation Date, Time Savings, Money Savings, Other Savings, Required Actions to Implement, Required Persons to Involve, Process Owner, Required Approver.

The setup in which Case Originator was supposed to define the best approver of implementation, created multiple misunderstandings, because P2 had to chase and convince a designated Approver about the benefits and risks of implementation. The biggest issues were identified as the cases with expected small amount of time and money to be saved. P2 mentioned: *“It felt like paradox to me many times where somebody submitted an idea worth 2 hours per month of time saved, but I had to spend much more time on evaluating, communicating, arranging signoffs and implementation of the case. Sometimes we all burnt like 50 hours of our time before it ever got implemented”*. From the evaluation perspective, P2 also emphasized issues with understanding the context of the task and solution choice. It was merely the decision of P2 whether the case could be solved with the actions and tools proposed by Case Originator, as well as their prioritization. If needed, CI Lead could escalate and ask for opinion from P1. Aside from the escalating role, P1 was also responsible for reporting and steering the overall progress of the programme to the board and CEO.

Collecting cases was based on quarterly targets set for each team. At the time of the study, every team was supposed to register 10 new cases every quarter. About half of the ideas were submitted just before the end of the quarter, apparently just to meet the goals. In practice, Team Coordinators were responsible for getting new records per target, yet only from their team members, as stated by P4: *“I never submitted any idea, as it was the job of our team workers. They know their processes the best and then should be proposing the cases. Managers, Board, and Team Coordinators were never asked to submit some case, and I thought this was not my duty”*.

The cases implemented were not published across the company communication channels, not even at CI Corner. Employees were advised to regularly check new records at the Lean Register at their monthly team meetings, yet there were differences among various teams about its control and awareness. As mentioned by P1: *“Quite often we got ideas for the cases that had already been registered in the past. Sometimes people*

were just proposing something that they really thought was important, but it was already rejected last year”.

4.2. The RPA Programme

The RPA programme was introduced in spring 2020 and organized across the 6 stages cycle (as in Figure 1) by the RPA Team that was part of the company IT Division.

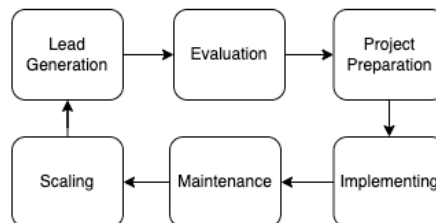


Figure 1. RPA Programme Cycle

The lead generation to identify RPA candidate processes was based on multiple promotion and educational actions, such as an initiation town hall meeting, sending monthly ‘Robotic Newsletter’, organizing presentations of its goals and structure to each team by P6. The automation ideas were supposed to be submitted to the cloud repository and case management system provided by Software Vendor ‘Automation Anywhere’. The number of submitted and implemented cases was much higher at the beginning. After the launch of the programme fewer ideas started to be collected. There were no targets for ideas, as mentioned by P5: *“In 2020 and 2021 we had huge amount of proposals, as people were almost begging us to robotize some of their tasks as soon as possible. Then, when these low-hanging-fruits, or quick-wins got implemented, we needed to start sending (...) <name of P6> around, so that (...) <gender of P6> could shop around and sit down for a few days with every team once in a while and try to get some automation opportunities to our pipeline”*.

At the evaluation stage, the role of P6 was critical, with below responsibilities:

1. Creating process documents for automation <as-is>. It often uncovered the differences and challenges with how process knowledge is managed, as said by P6: *“The work instructions I am given are always different, sometimes completely impossible to understand (...), depends on language skills of a writer, approach to making diagrams or graphs, structure of describing process”*.
2. Defining scope of the robot, in the context of factors facilitating automation, at the same time seeking synergies between various business areas.
3. Defining new process <to-be> that will take place after the implementation of the robot. That is,

look for synergies between various business domains and the processes already implemented.

4. Forecasting return on investment (ROI) based on benefits (financial and intangible), as well as verifying preferable timeline and risks (potential blockers). In practice, ROI was the key driver in the prioritization of cases, as stated by P5: *“We needed to prove ourselves and show real results to the board”*.

Next, the preparation of project was devoted to requesting necessary accounts and accesses to the resources involved at the project (drives, servers, systems), as well as requesting required resources to implement the solution. Until this point, only unattended solutions were getting implemented merely by IT developers from the RPA Center of Excellence. As stated by P6: *“The key challenge was common understanding of the case context and situation where there was more than one process expert. They were many times disagreeing with each other, so I had no chance to reach that final version of the process before a few workshops between themselves.”*

The implementation itself was performed by the global team of RPA Developers with almost no contact of Idea Originator. Only challenges that required immediate reaction and acceptance tests involved this person. Such silos resulted in some risks, as stated by P8: *“We had couple of cases where nobody ever told us that they will be producing the robot for us, and then I was invited for the test of something completely different from what I requested”*. Another important activity performed by P5 was the follow-up of the active time burnout of the engaged developers: *“Unfortunately, most of the programming work exceeds the limit of forecasted hours, as our developers are frequently not understanding the process the same as process experts and spend quite much time on asking additional questions”*. When it comes to the possible inclusion of non-IT personnel, P5 stated: *“We do not wish to include anybody at development, as we do not trust in coding potential and competence of business side”*.

After a robot got implemented, it was passed to the maintenance team where it would go through hyper-care, and stabilization to be transferred to production support. Possible changes to the process could trigger service requests, but no major involvement of process experts was required. Finally, the scaling stage was about the search of the possible next possibilities, how the robot could be improved and extended. At the same time, the actual ROI result would get verified by P5, and the newly implemented robots would get communicated to the entire company via an Intranet post. The originator of idea also received some small gift, as stated by P7: *“Once I was*

given a robot mascot after my process was automated, and one of my Friend got a mug with robot. (...) It was so fun!”.

4.3. The Synergy: ‘Leanbotics’ Programme

The two initiatives described in Sections 4.1 and 4.2 were being run independently although both broadly shared the goal of improving organizational processes and increasing employee participation. After a thorough study of the two initiatives, it was proposed to create a synergy between these two activities.

The new programme was established with the aim to digitally transform delivery teams by improving processes with technology, and achieve a constant evaluation of CI and RPA potential that would lead to employee empowerment and inclusion. The continuous process development actions started to be performed jointly by CI and RPA Teams with representatives of two departments subject to transition: accounting and payroll. The design of the new service provided with the Leanbotics Program was supposed to be a common development of every actor, with facilitation by the external consultant for maintaining objectiveness. The joint initiative was focused on engaging every single person in the organization, by searching for synergies and links between the Robotic Process Automation Centre of Excellence (RPA CoE) and Business Process Improvement Teams. P1 gave it a new name: *“Leanbotics is what we aim to achieve, as taking advantage of our strong business experience is key to discovering full automation potential in a company at the long run”*. Hence, the processes of lead generation was converted onto a problem based, where CI and RPA intranet pages merged onto the new Leanbotics Corner, and in order to submit a case, Case Originator needed to give its base information but also ‘describe business problem’, so that the entire implementation effort was concentrated around solving this problem, not on any solution. As stated by P5: *“From now on, RPA is just one of potential technologies in the stack of automation, along with in-system automation, workflow could automation, traditional integration, intelligent elements (machine learning, NLP, OCR/digitizing) and the skilled usage of already available low-code solutions (i.e. Excel macros, PowerShell scripts), but we can also improve processes with CI practices, depends on the case.”* Hence, for true success of process automation and improvement, CI and RPA should be treated as complementary paths to the same goal - the sustainable process development at the organization. The responsibilities of the new programme were split as seen in Table 2.

Table 2. ‘Leanbotics’ responsibility matrix

Task	RPA CoE	CI
Management of the continuous improvement initiative		x
Process mapping, analysis and improvement	x	x
Development estimation	x	
Business case forecast and acceptance	x	x
Implementation of solution	x	
Maintenance	x	
Communications and recognition		x

The approach of managing AS-IS processes, was changed by performing detailed quantitative and qualitative analysis with process mapping and mining tools. A license to process management platform was acquired from Celonis, and P1 was designated to run an implementation of a new approach of common/unified process managing. As stated by P1: *“The role of this tool was to engage and include everyone, focusing on identifying value proposition and developing meaningful and easily understandable process maps, based on data (...). At the same time, we wanted to get more insights to address delivery challenges in operational processes, so that they can be solved with various tech solutions delivered by our RPA CoE.”*

P2 and P6 were supposed to take joint responsibility for the below tasks:

- Engaging and including everyone, Business Stakeholders, and Leanbotics Team members to reach common, end-to-end understanding of processes targeted for automation.
- Organizing and facilitating shadowing sessions with process SMEs to collect AS-IS process overview and map its results.
- Understanding pain areas identified during process discovery and propose recommendations for potential solutions. Categorize them into quick wins, as well as medium- and long-term fixes for prioritization.
- Working with Business Units to create value analysis (ROI) and submit business case for review and approvals, to enable effective prioritization of pipeline.
- Share best practices of Leanbotics across all the other business units, via all available channels.

A series of workshops with Heads of Departments and Team Coordinators were held to engage every single person around the common goal. As stated by P3: *“It was really surprising when we decided to invite our CEO for one session. When (...) <gender of the person> joined online just for some part of the workshop, it was said that now even CEO*

will submit improvement proposals, as we all should. It was expected to treat every single idea the same, equal way”. From now on, the cases were supposed to be not compulsory, but its collection and management was supposed to get gamified. Every person whose idea gets implemented would receive special Leanbotics credits that cumulated could be exchanged for a gift card or a charity voucher. There were also other games under preparation that were aimed to be arts-based and creative, including one for the best process, process owner, or a voting for process improver of the month. Moreover, the cases with biggest value started to be displayed on corridor screens and Leanbotics Intranet with dynamic graphs and diagrams developed by MS PowerBI tool. Moreover, the behaviours and success rates of automated transactions performed by robots were also displayed.

Implemented cases would be announced and celebrated each time a new case gets completed. The visual one-slide was designed, presenting four key aspects for automation. These aspects are compiled in Table 3:

Table 3. Use Case Aspects

Aspect	Description
Summary	The automated process is from the <Process Domain> domain, with the monthly volume of <transactions per month> transactions. In short, <summary>
Organizational Transformation	Our company focuses on clear communication with each customer while ensuring competitive price and high quality. Implementation of this solution enabled the following functions at the Customer organization to be transformed: <Customer organization transformation>
Value Added	As a result of the implementation, employees that were assigned to the manual processing before, are now only overseeing the process and are able to focus on more relevant tasks. As for the other key improvements: <Key improvements>
Delivery model	Our company collaborates with customers by supporting their strategy and ensuring fast scaling of developed solutions. In this case, the <Delivery model> delivery model enabled <one of the options from the notes below>

Another important decision undertaken by the ‘Leanbotics’ transformation, was the strategic decision to offer internal training of the RPA platform Automation Anywhere to every employee (Siemon & Kedziora, 2023) that would be interested to learn basics of programming and in the future,

independently develop software robots for less complex processes. As stated by P3: *“We think that there are many simple processes in payroll, and as we noticed the big trend of citizen development in our industry, we would like everyone to have a chance to become entry level RPA software developer, to make the best of the synergy between process and technical skills.”* The formation of RPA trainings programme was to be performed with representatives of all teams, so that their diverse needs could be reflected throughout the whole service design process. It was tentatively framed in line with the roadmap presented in Table 4:

Table 4. ‘Citizen Developer’ roadmap

Step	Description	Owner
Education	educating business units about value proposition and requirements	P5
Recruitment	finding and securing capacity of part-time developers at each business unit	P3, P4
Practical Training	taking every selected person through coding training plan	P6
Community Building	organizing regular sharing sessions among new developers (achievements, tool usage, challenges)	P6
Continuous Support	supporting citizen developers in more difficult cases; promoting available tools, as well as available further trainings	P1, P5

The last fundamental decision was to embed the Leanbotics programme in the external relations and sales actions, acquiring new processes (Figure 2). Its aim was to achieve a sustainable, hybrid workforce (digital and human), where some parts of the process would be executed by employees, and some by software robots. As stated by P4: *“I’ve had in mind for many years that some of the tasks are so boring and error-prone that some robot would be actually better to get them done. We also strongly believe that we should give equal chances to all our employees in learning new skills. Why not RPA, as they could make the best of their business knowledge and technical skills”.*

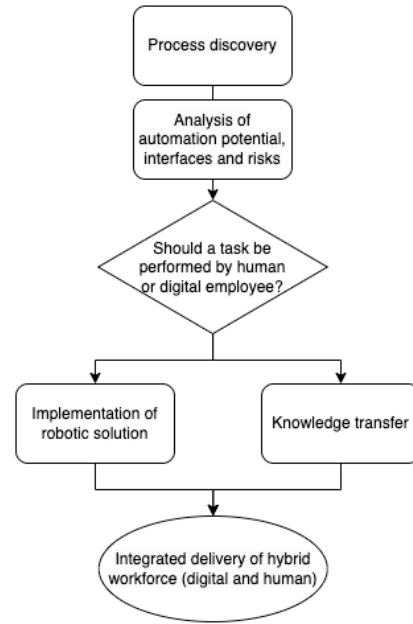


Figure 2. Hybrid service design

5. Implications and Conclusions

This case study and the corresponding feedback illustrates the importance for an organization to consider coordination among the various initiatives which may have different team players championing those initiatives but have somewhat similar and yet distinct goals. By combining Lean and robotics, Leanbotics became a more powerful initiative for our case organization. The case study also illustrates the power of inclusion in coordinating such initiatives.

To address our research question, the case study illustrates that by intertwining CI and RPA, organizations can foster inclusivity within their digital transformation initiatives. This is achieved by involving all employees, at all levels of the organization, in the design and implementation of service improvement processes. As a result, it is consistent with Alka's (2021) assertion that digital transformation and process improvement can yield significant benefits if managed inclusively and appropriately. These findings extend beyond the realm of digital transformation, touching on theories of lean and kaizen. The case study supports Al-Baik & Miller's (2016) argument that methodologies such as Lean and Kaizen can create a learning culture that addresses the collective needs of all employees, management, consumers, and users, especially when effectively governed. By interweaving these methodologies with RPA and low-code platforms, the program enhances traditional approaches to organizational improvements and contributes to its

current understanding, which in turn echoes the work of Heuer et al. (2022).

The success of the Leanbotics program also has implications for the concept of citizen developers (Oltrogge et al. 2018, Kedziora 2022), because equipping workers with the skills to develop basic automation solutions not only optimizes processes, but also empowers workers. This empowerment, therefore, contributes to the inclusion of employees in the broader scheme of digital transformation. Moreover, the program is in line with the principles advocated by Bock & Frank (2020), who argue that low-code platforms and process automation technologies integrate traditional system design components, simplifying the implementation of business applications. The Leanbotics program demonstrates how these technologies can be used to improve service design and integration. Finally, the case study responds to Young et al.'s (2021) call for more research on dialogue and inclusion in IS and Nembhard and Edmondson's (2006) urge to explore leadership inclusivity in quality improvement work using technology.

Our single case study comes with obvious limitations of being based on a single organization. However, the overall story provides positive lessons for any organization considering such initiatives. As more organizations consider new AI-based projects (such as integrating ChatGPT, etc.) into their processes, they should consider the lessons learned from this case study to create synergy across projects. Of course, further research is also needed to replicate and study impacts of such integrations in multiple settings, cultures, and domains. However, in conclusion, the findings underscore the need for organizations to approach digital transformation inclusively, integrating the diverse needs of their employees by fostering an environment that empowers employees to actively contribute to the process. In doing so, it underscores the potential of CI and RPA to not only improve operational efficiency, but also drive inclusive, holistic digital transformation.

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