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Evaluating A Skill Management Platform: Towards an Upskilling System for Large and Small Companies

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Abstract: As industry navigates the transition towards Industry 5.0, the need for human-centric workforce development becomes more pressing than ever. This shift highlights not only technological implementations but also employee empowerment through lifelong learning. Digital platforms for learning and skill management rapidly emerge, to align individuals' skills with changing organisational needs. However, how these platforms are perceived and integrated across different companies is greatly underexplored. This study describes a mixed-methods evaluation of a digital skill management platform implemented in two industrial contexts: large Swedish companies and small and medium-sized enterprises (SMEs) in Germany. The platform offers individual skill gap assessments, recommending suitable training for users. In the study, two main dimensions were investigated, i.e. the platform's perceived effectiveness for users and the organisational integration of the platform. Results show a range of challenges in said dimensions. Users report varying platform usability and relevance of recommended learning. Results also reveal challenges in organisational integration and in aligning the platform with existing company-internal skill, task, and job taxonomies, including learning management systems (LMS). Other identified issues were user engagement and the visibility of learning progress for managers. Our conclusions emphasise the importance of adapting solutions to organisational contexts when implementing skill management systems. Based on insights from the study, recommendations for supporting successful implementation of such platforms, including the need to accommodate different stakeholder needs, are outlined. Our recommendations include enabling conditions, organisational integration and platform design. The presented results contribute to ongoing discussions on how digital learning solutions can support efficient workforce transformation towards Industry 5.0. Our findings have clear value for the university and research institution context, where researchers, teachers, and leaders are exploring ways to deliver lifelong learning opportunities in industry. Skill management platforms have potential to serve as bridges between university courses and workplace learning demands, enabling universities to play important roles in their employees' lifelong learning.

Keywords: Upskilling; Skill gap; Skill matching; Learning Management Systems; Industry 5.0

1. Introduction

Increasing demands for a strong, well-skilled European workforce has put pressure on organisations' learning and human resources departments. Industry needs to become resilient and sustainable while putting humans at the centre (Breque et al., 2021). People working in industry are key drivers for this transformation and need to be supported in their well-being and skill development. Upskilling initiatives have been implemented to train employees and prepare them for new tasks and ways of working. According to the World Economic Forum (World Economic Forum, 2025), 39% of employees' skills will soon be outdated and new skills will need to be learned. To meet this demand for training, education providers need to adapt their curricula and create training to bridge the industry's skill gaps.

Clearly, companies and their employees today struggle with job changes. One reason is the challenge of identifying new skills needed, finding relevant training for each employee (Rikala et al., 2024, Fareri et al., 2023). The speed of change is increasing, and individuals require support in assessing their skill gaps. To meet this need, attempts to perform digital skill gap assessment and matching to training have been made by e.g. leveraging artificial intelligence (Braun et al., 2024a) or patent analysis (Fareri et al., 2023). However, such solutions are underexplored, there is a lack of research on the impact of the solutions on people and their skill gaps.

In approaching this research gap, this study evaluates implementations of one digital skill management platform in two contexts, i.e. 1) at four large companies in Sweden and 2) at two small companies in Germany. The study evaluates the outcome of implementing a skill-matching solution, including different stakeholders' perspectives,

and provides insights into the challenges. By analysing participant activity in the platform, their feedback during focus group settings, and surveys, common key outcomes could be identified and were mapped as recommendations. To guide this study, the following research questions were formulated: *How was the skill management platform perceived within large companies in Sweden and SMEs in Germany, especially regarding organisational and technological aspects? How should scalable skill management ecosystems be built?*

2. Theoretical Background

To provide the context for this paper, this chapter outlines the significance of continuous skill development within the workforce during the industry's digital transformation towards Industry 5.0 and provides an overview of assessing skill gaps.

2.1 Skill Development in a Changing Industrial Scenario

In an increasingly digitalised industrial environment, where sustainability, resilience, and human-centricity become more important, work is changing too, i.e. changing skills, leadership, collaboration, communication, corporate culture, occupational health and wellbeing, and more (Singer-Coudoux et al., 2023). At the same time, fewer young people are entering the job market due to demographic changes in Europe and other parts of the world (Statista, 2025). Recruiting talent will therefore be challenging. Employees need to adapt the way they work and train new skills to meet the new requirements, managers need to give the resources and right motivations, and education providers need to find new ways to deliver training opportunities to the industry (Braun et al., 2024b). Lifelong learning is becoming crucial for being valuable in the job market, and digital learning platforms are one important option to bring training to employees (Braun et al., 2022a). However, it is challenging for managers and their employees to know what should be learned in connection with the way the business is transforming. In the current industrial scenario, skill gaps arise when employees don't match the skill needs of their employer, hence not having the right skills with the right person at the right time, hindering the business from transforming (Rikala et al., 2024, McGuinness and Ortiz, 2016). Therefore, there are solutions to support understanding how job roles are changing and what new skills should be learned, and what could be suitable training to bridge the person's skill gap.

2.2 Identifying and Bridging Skill Gaps

This section summarises research about identifying and bridging skill gaps in industrial contexts.

2.2.1 Identifying Skill Needs for an Individual

The need to adapt training to an individual's needs is more important than ever, but tools that recommend new skills and training to employees are still underexplored (Braun et al., 2022b). There are some examples for skill-matching solutions, e.g. (Fareri et al., 2023) propose a tool to map a worker's current skills and the skills that meet current and future business needs by analysing patents. This patent analysis gives insights into technologies impacting the work humans do and provides implications for how jobs and skill needs are changing (Fareri et al., 2023). In a recent publication (Braun et al., 2024a), an AI-based skill gap assessment tool uses data from LinkedIn and other databases to make conclusions about a person's skill needs and recommends them to suitable learning, just by asking for their current job role and industry. Different attempts have been made to match skill needs, job roles, tasks, and relevant learning to people (Braun et al., 2022b). Some challenges have been noticed so far, including the content specificity related to the specific industry of the recommendation and the continuously changing industry, requiring the skill matching to be updated continuously to stay relevant. From a technological perspective, it is challenging to handle company-specific skill taxonomies and the integration with existing systems (Braun et al., 2024a).

2.2.2 Assessing Skill Gaps

To bridge skill gaps, one first needs to understand and measure the skill gap. Skill gaps can be measured in various ways through data collection from stakeholders, such as employers, employees, but also from databases containing job information like LinkedIn or the ESCO database by the European Commission (European Commission, 2024). In some cases, companies define a skill framework for a certain job role and a set of skills that this job role contains. In the skill assessment step, employees can use the skill framework to do a self-assessment and find out their skill gap (Rikala et al., 2024). However, self-assessment of skills can be biased. The famous Dunning-Kruger effect describes how humans often assess their skill level lower after training a certain

skill (Dunning, 2011). Another way of reflecting people's assessment of their skills is by using the Johari window, which describes the self-awareness and others' perception of oneself (Luft and Ingham, 1961).

3. Methodology

This study used a mixed-methods approach to evaluate a skill management platform across two distinct organisational contexts: large corporations in Sweden and small to medium-sized enterprises (SMEs) in Germany. While both groups used the same digital platform, the evaluation strategies were tailored to suit the respective context and research access. The sample was purposively chosen to include large companies and SMEs to identify needs for both user groups.

3.1 Overview of the Skill-matching Platform

The skill-matching platform has been implemented in the contexts of large companies and SMES to determine whether it meets the need to assist employees and organisations in identifying their skill gaps and determining what to learn. The platform leverages AI to assess participants' job roles and companies, identifying the current skills required for their roles. Users view the identified skills and can select some to focus on. In the subsequent step, the platform allows users to self-assess their current levels in these skills and identify their skill gaps. Ideally, the users' managers also assess their employees' skill levels concurrently. Based on these assessments, users receive personalised recommendations for learning modules, based on the AI's suggestions. The concept and functionality of the skill-matching platform are detailed in two prior publications, see (Braun et al., 2024a, Orth et al., 2023).

3.2 Sample A: Large Company Context

In Sweden, the study involved 40 participants from four large industrial companies in the automotive, manufacturing, and energy sectors. Participants completed a survey before their profiles on the skill-matching platform were set up. This survey was necessary to gather their job profiles and company details. For each individual, the platform team established a profile on the platform and identified the skills required for their job role at the respective company. Participants accessed the platform, completed a self-assessment, and received information on their identified skill gaps along with recommendations for future learning. The matched learning opportunities were focused on modules from a Swedish online learning platform created by 13 Swedish universities (Braun et al., 2023).

After the platform-based assessment, the participants were invited to semi-structured focus groups. These were organised separately for learners and managers, facilitating an understanding of different stakeholder needs. The topics discussed during the focus group meetings included self-assessment, trust in AI, the relevance of the recommended learning content, platform usability, and the benefits and challenges associated with integration into the organisation.

The sample was assembled from four different companies. Company 1 is an automotive company, Company 2 is in the manufacturing sector, Company 3 is an energy company, and Company 4 is also within the automotive sector. Participants' job roles range from engineering and technical roles to leadership and management roles. Some participants are learning leaders in their companies, or have roles related to data, digital factory, operations, and business. Some participants have roles related to customer service.

3.3 Sample B: SME Context

The German part of the study was conducted in collaboration with two SMEs, both medium-sized manufacturing firms (sheet-metal fabrication and welding technology, respectively). A total of 7 participants from these companies took part in the pilot: this included technical specialists and team leaders (as end-user learners), as well as staff involved in HR and development roles (as managers overseeing training).

We employed a mixed-methods approach combining an online survey with qualitative focus group discussions. The online survey was administered in Q1 2024. In parallel, two structured focus group discussions were conducted: the first in Q4 2023 after initial platform use and the second in Q1 2024 after further use and platform updates to gather in-depth feedback. This design allowed us to track changes over time and to triangulate numerical ratings with rich qualitative insights.

The evaluation instruments were structured around four key indicator clusters reflecting the project's objectives: 1) Technology: Focusing on platform usability and functionality, 2) Organisational Integration: The degree of platform implementation in company processes and support from leadership, 3) Accompanying Workshops: On the topics of corporate strategy and systematic competency development and, 4) Overall Platform Impact: Overall effectiveness of the platform for learning (including satisfaction and perceived benefit). Participants rated the platform's usability and user interface, reported on their learning outcomes and skill development progress, assessed the career relevance of the content, and noted their frequency of use (e.g. typical hours per week).

The survey also collected overall satisfaction ratings and self-assessments of knowledge gain. The focus groups (with 3–4 participants each) were guided by the same themes, using open-ended questions to prompt discussion about learning experiences, perceived benefits or obstacles, and suggestions for improvement. The longitudinal approach provided insights into changes in the users' perception and potential impact over time, with rich qualitative feedback on platform value and limitations.

4. Results

This section presents findings from the Swedish and German sample, based on self-assessments, platform activity, and feedback from focus groups.

4.1 Results From Sample A

The results are organised according to the two participant groups: end-user learners and managers managing the learners.

4.1.1 Learners' Perspectives

Some reflections of learners were made regarding their experiences with the skill assessment. Several learners, particularly from Company SE1 and Company SE4, reported **difficulty in evaluating their own skills**, especially those with a lot of experience. Respondents reported a difficulty in knowing what to refer to when assessing their own skills, for instance, what does a "2" mean on the scale? Participants from Company SE1 and Company SE2 expressed **frustration with the interaction** with the platform, e.g. that they couldn't return to revise previous skill choices, revisit content recommendations, and some functionalities were not found intuitively. Some learners from Company SE2 and Company SE3 expressed that they received **irrelevant content** after selecting the skills. However, learners from Company SE4 expressed that the articles recommended as learning content were very useful for them. But there were mixed answers about the satisfaction with the recommended content. Users from Company SE2 appreciated recommended courses like the one in data science, but others felt the results were too generic. A user from Company SE4 was also sceptical about how well the suggested skills align with their current job role. They also requested a way to give feedback to the system immediately, to e.g. suggest skills perceived as missing.

One common point was that learners from all companies noted **difficulty in finding time** for self-assessment and learning activities. This was particularly emphasised in Company SE3. The participants also highlighted that a session facilitated by the platform provider or the project team as a workshop would have helped to improve the engagement of learners with the platform.

4.1.2 Managers' Perspectives

Regarding the integration of the skill management platform into existing systems, managers from Company SE3 and Company SE4 expressed concern about the platform being "yet another tool" in already quite **fragmented learning management systems**. A manager from Company SE3 explained that they use a learning management system from an external provider and also have their own internal platforms. At Company SE1 and Company SE4, managers explored the **possibilities of integrating** the platform with existing HR processes, such as annual employee development meetings.

Several managers, particularly from Company SE3, express a **hesitation towards AI-generated skill assessments and recommendations**, and expressed that they will use it alongside human interaction. As the manager from Company SE3 put it, that the platform "can be used as a tool to reflect, but we still need to talk with our employees". In addition, managers from Company SE2 and Company SE4 noted that the **skill definitions**

generated by the platform were often too broad and unspecific, and that they could be improved by connecting the platform to the company's internal definitions of job roles and skills.

Some challenges were raised regarding the engagement of their employees. Managers from all four companies acknowledged the **difficulty in engaging users** and explained that the employees' time constraints were the reason for less engagement. Managers from Company SE1 and Company SE3 proposed a walk-through session to show employees how to use the platform and limit the hurdles to start. A manager in Company SE2 suggested applying the platform for recruitment to assess candidates' skill profiles.

4.2 Results From Sample B

The following section presents selected findings based on the method described. The results are organised across four core dimensions:

4.2.1 Technology-Level Evaluation

The two focus group sessions conducted between Q4 2023 and Q1 2024 revealed significant changes in users' perception of the platform's usability. In the first session, participants from Company DE1 and Company DE2 reported challenges with registration and basic functionality. By the second session, users highlighted improvements such as smoother scrolling and a clearer interface, although some issues remained with newly added features and overall navigation.

While usability was increasingly rated positively, participants identified areas for further improvement. Suggestions included implementing filters by skill level, visually marking completed content, integrating company-specific materials, and adding gamification features to increase user engagement. These qualitative insights aligned with survey responses, which showed overall positive answers in the perceived user-friendliness of the platform among both learners and managers.

4.2.2 Organisational-Level Evaluation

Organisational integration of the platform also showed noticeable developments over the evaluation period. In the first focus group, participants described limited influence on team processes and reported low satisfaction with learning outcomes. Without formal structures or time allocations, employees found it difficult to engage in self-directed learning during work hours.

In contrast, the second focus group reported more flexible use of the platform, leading to greater satisfaction and improved learning outcomes. Survey data supported these results, with learners noting increased knowledge, motivation, and application of new skills. Overall, the platform was seen as a valuable tool for professional development, particularly in fostering self-reflection and growth.

However, discussions indicated that these benefits were most evident among intrinsically motivated employees. To better support broader engagement, participants suggested integrating a chat function and embedding the platform into collaboration tools such as Microsoft Teams, which would enable easier access and peer interaction.

4.2.3 Evaluation of the Accompanying Workshops

The accompanying workshops on organisational development were rated very positively by both focus group participants and survey respondents. As part of the integrative strategic and operational approach to competence development, the accompanying on-site workshops with managers and employees served to systematically assess the strategic orientation and digital maturity of the participating companies, and to derive role-specific development pathways and incentive systems aligned with individual and organizational transformation goals. Users highlighted the strategic perspective, the relevance of the content, and the well-structured delivery. At Company DE2, the career framework and customisation to internal needs were particularly valued, while participants from Company DE1 emphasised the usefulness of structured competence development and the revision of role descriptions.

The workshops were viewed as an important contribution to the overall success of the learning platform, improving both its organisational alignment and practical applicability. Survey feedback confirmed high satisfaction across all thematic areas, and managerial participants recommended that such workshops be continued in future implementations.

4.2.4 Overall Platform Feedback

Overall, feedback on the learning platform improved over time. Participants in both focus groups reported average weekly usage between 2 and 3.5 hours. The first group appreciated the platform's structure and organisation, while the second emphasised its clarity and flexibility for on-demand learning. Different content types—such as podcasts, video modules, and interactive workshops—were consistently well received.

Both learners and managers offered suggestions for further enhancement, including gamification, social features, and certificate options. These contributions reflect strong user engagement and a shared interest in optimising the learning experience. By the end of the evaluation period, most users rated the platform positively, with the majority giving it four out of five stars.

5. Discussion

This study examines how a skill management platform is perceived by large companies in Sweden and SMEs in Germany, particularly concerning organisational and technological aspects. The study aimed to understand whether it is feasible to map a relevant and complete skill set for an individual using job role and company information. Participants from both the Swedish and German samples acknowledged the value of the skill management platform but emphasised several barriers to its effective utilisation. Swedish learners found the self-assessment component challenging and questioned the relevance of the platform's recommendations to their roles, while managers expressed concerns about system integration and trust in AI. Moreover, apprehensions were raised about the varying meanings or definitions of a specific skill depending on whom you ask. In contrast, German users reported an enhanced experience over time and stressed the importance of organisational support, such as workshops, to align business goals with learning priorities. Across both contexts, time constraints and a lack of facilitation emerged as significant barriers to adoption. Nevertheless, the platform demonstrated strong potential for fostering reflection, skill development, and organisational learning. There are differences between the two contexts regarding learning infrastructure, flexibility, and support, although the sample size is too small to draw robust conclusions.

5.1 Comparison of Findings With Existing Literature

Our findings align with the theoretical background presented in this article, particularly concerning the challenges of self-assessment bias, the adoption of AI-based learning recommendations, and the complexity of organisational integration. As noted by Swedish participants, especially those with extensive experience in their roles, self-assessment of skills proved to be challenging, which aligns with the known limitations of self-assessment methods, such as bias and a lack of clear reference points. However, self-assessments need to be evaluated carefully, since the reality has more perspectives than only the individual's reflection, as explained in the Johari window (Luft and Ingham, 1961). The Johari window includes people's perception of themselves and other people's perception of them, but not AI's perception of them. This raises the interesting question for the future, if the Johari window could be extended, for the age of AI? Furthermore, the mixed reactions to recommendations reinforce previous research highlighting the difficulty of maintaining relevance in learning recommender systems, given the continuously changing industry needs. From an organisational learning perspective, our study confirms that successful adoption depends not only on functioning technology but also on the integration of organisational processes with existing HR systems, as well as managerial support. Nevertheless, the engagement observed in the German SMEs illustrates how smaller firms may adopt such tools more readily when social learning is prioritised. In summary, our results contribute to the theoretical understanding of the complexity of skill platforms within the context of industrial transformations and underscore the need for user-centred strategies.

5.2 Recommendations for Stakeholders

To clearly synthesise our results and guide the future development of skill management platforms, we propose the following recommendations for stakeholders involved, see Figure 1. This pyramid visualises the multi-layered requirements for successful skill management, based on focus group insights from both a German SME and Swedish large enterprise context. It highlights three interconnected levels of action:

Enabling conditions (base of pyramid), aimed at **policymakers**, include recognising alternative learning paths, e.g., through micro-credentials or certificates, funding pilots for digital learning ecosystems, and building inclusive ways to develop skills.

Organisational integration (middle level), targeted at **companies and employees**, highlights aligning skill platforms with existing HR processes, fostering engagement among employees, and promoting the tool as a means to personal growth for employers. **Employees** should view the tool as a personal development tool and use it for reflection and feedback to continuously improve recommendations.

Platform design (top level), directed at education and platform providers, focuses on simplifying assessments, intuitive interfaces, meaningful progress visualisation, relevant content, building trust in AI, providing kits for onboarding support (e.g., workshop materials for strategic competence planning in companies), and interoperability with existing systems.

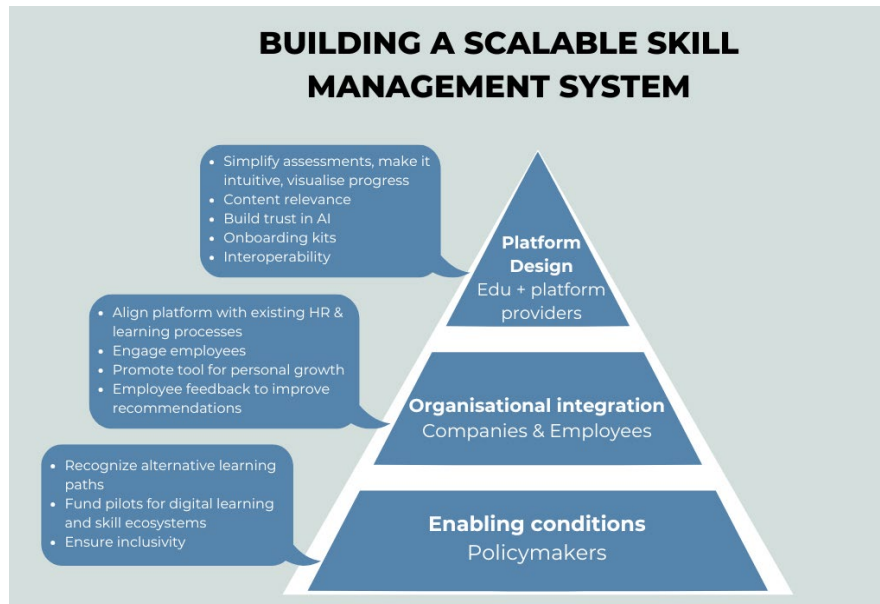


Figure 1: Recommendations in Building a Scalable Skill Management System

By illustrating these levels as a pyramid, we emphasize the foundational role of policy incentives and organisational integration to enable effective technical implementation of skill management platforms.

5.3 Discussion of Methodology

The mixed-method approach was intentionally chosen to be adaptive to the differing contexts and access conditions in Sweden and Germany. The Swedish sample from large corporations was studied through focus groups, while the German SME sample was studied through an online survey and longitudinal focus groups to capture evolving perceptions over time. We acknowledge that the small sample size limits the statistical generalisability. However, the findings serve as a valuable starting point for building knowledge of user needs, expectations, and improvements. This evaluation has a qualitative depth and offers sensitive insights, while the mixed-method design enabled triangulation across data sources and contexts. We interpret the results with humility and don't see them as definitive conclusions, but as an early foundation that can guide future development of skill management platforms. In this context, the small, purposefully selected sample allowed for qualitative insights into the early-stage development of skill management systems.

Although the two samples were evaluated using different methods, the decision to merge findings was based on shared use of the skill management platform and complementary insights from both contexts. The combination of structured focus groups and an online survey allowed for holistic understanding of user experience, platform integration, and perceived learning value across different organisational settings.

5.4 Future Work

In the future, more longitudinal studies should be done to explore the long-term impact of skill management platforms on employees' learning, their career development, and the organisational transformation. In addition, it would be beneficial to investigate how learning can be personalised in a structured way, especially concerning different organisational contexts. Lastly, future research should involve improving AI-driven recommendations based on human input and increasing adoption by embedding platforms in everyday workflows. Therefore, future research should involve more user perceptions and ideally involve more diverse participants.

6. Conclusion

AI-driven solutions to resolve massive skill gaps, e.g. in Europe, show potential both for large enterprises and SME contexts. Despite their different needs, in terms of flexibility and support, the study reveals commitment and belief in solutions to enhance upskilling in companies. The mixed-methods approach applied in this study allowed for a holistic understanding of the learners' and managers' perceptions of the studied skill assessment platform. This study reveals the challenges related to technology, taxonomy, and platform design, but also in organisational implementation and management.

This study contributes to theory by deepening the understanding of how digital skill management platforms are perceived across different organisational contexts and gives recommendations on how to build a scalable skill management ecosystem. By combining the data from two different contexts, it enriches the knowledge on challenges regarding trust, personalisation, and role alignment in AI-driven learning systems. Practically, the study provides hands-on actions for policymakers, companies and employees, and education providers. The resulting recommendations offer a guide for improving the usability and organisational implementation of digital upskilling tools.

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Ethics and AI Declarations

Ethical clearance was not required for this research. An AI tool was the studied object here, and other than that, AI tools were used for grammar and spelling checks and recommendations (Grammarly).

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