

Supplementary Material: Application of Scenario Technique Analysis for Predicting Future Impacts of Service Robots*

1 SWOT for the Best-Case Scenario

Table 1: SWOT for the Best-Case Scenario

Strengths	Weaknesses
In the best-case scenario, companies, including the BSR, capitalize on a highly qualified workforce prepared for interactions with service robots. Human-robot collaboration boosts productivity and improves working conditions, as robots take on monotonous or physically challenging tasks, which elevates employee satisfaction. With robots providing consistent, high-quality services around the clock, companies achieve productivity gains and a strong competitive edge. Additionally, the engaged and satisfied workforce actively shares their positive experiences, enhancing the public image of the company and attracting interest in robotics-related careers.	Implementing service robots requires substantial investment, particularly to restructure the value chain, maintain full employment, and fund the necessary retraining programs. For companies like the BSR, these costs extend to personnel expenses for both existing and new employees, as well as significant investments in advanced robotic systems and internal training programs. Although these investments are expected to yield long-term productivity benefits, the short-term financial strain could impact overall competitiveness. For the BSR, these costs are especially significant as a public entity, where budget constraints may hinder expansion.
Opportunities	Threats
Companies are well-positioned to expand their service offerings and explore new markets, supported by government funding in research and development, which accelerates innovation in robotics. This allows businesses to continually enhance their product and service lines, reaching new customer segments and strengthening market positions. BSR, as a public service organization, can leverage these developments to improve its sustainability and operational efficiency.	Given the supportive conditions in this scenario, no significant threats are identified.

*DOI: <https://doi.org/10.1017/pds.2025.xxx>

2 SWOT for the Worst-Case Scenario

Table 2: SWOT-analysis for the Worst-Case Scenario

Strengths	Weaknesses
<p>In the worst-case scenario, companies like BSR primarily benefit from the cost savings associated with fully autonomous service robots, which operate with minimal human oversight. The reduced reliance on human labor enables companies to compensate for the constraints caused by the shortage of skilled workers. In the long run it also might be possible to cut personnel expenses significantly, potentially creating resources that can be redirected to other operational needs.</p>	<p>A major weakness in this scenario is the severe shortage of skilled workers for a workplace increasingly dominated by robotic technology. This shortage limits operational efficiency. Additionally, the lack of retraining programs and robust safety protocols exacerbates job dissatisfaction, resulting in low morale and potentially high turnover. Employee dissatisfaction may also lead to an inability to achieve the full productivity benefits of automation, diminishing the overall potential impact of the technology.</p>
Opportunities	Threats
<p>This scenario offers few, if any, viable opportunities. The lack of skilled personnel and the low levels of employee engagement create a restrictive environment where expansion or innovation is challenging, if not impossible.</p>	<p>Reliance on autonomous robots without adequate human oversight increases vulnerability to service disruptions from technical failures or malfunctions. Poor compliance with safety and data regulations could result in significant legal costs and penalties, damaging the organization's reputation and eroding public trust. For the BSR, this scenario is particularly damaging, as the organization's mission depends on consistent, reliable public service delivery. Employee dissatisfaction and turnover due to unsafe working conditions further compound these risks, creating a cycle of disengagement and service quality decline that threatens the organization's mandate.</p>