How the Cleaning Industry is approaching Innovation:

Facts, Trends and Outlook for Europe













White paper 2020





Data Collection and Methodology



How the data was collected

- Co-initiator and partner of this study is ISSA, the worldwide cleaning industry association.
- The data for this white paper were collected through secondary data analysis and qualitative expert interviews.
- The survey period took place from 16th December 2019 through 15th February 2020.
- A total of 18 guided interviews were conducted.
- The target group for the survey is made up of manufacturers (8), associations (1), building service contractors (BSCs*) (5), dealers (2) and service/technology providers (2) who represent 12 European countries.

Innovation management in the cleaning industry

Desk Research

Databases, Expert
Information

Primary

Primary Research Interviews with manufacturers & associations

Interviews with suppliers & service providers

Consolidation of Results

Result comparison and verification through additional interviews if necessary.

Establishment of Market Overview



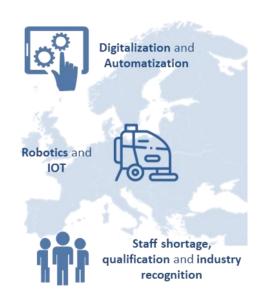


Executive Summary



Innovation management in the cleaning industry

- Digitalization, automation, robotics, staff shortage, relevant qualification, industry recognition and sustainability are the most pressing matters.
- Innovation in the industry is moderate and influenced by developments from outside.
- Requirements of BSCs and in-house cleaners are not considered enough in the innovation process.
- R&D cooperation is seen as very important but hardly exists in practice.
- Robotics and digitalization are here to stay, and their impact will grow in the future.



Contents



| | Status quo and current trends |
|--|---|
| Innovation management in the European cleaning industry | 2. Innovations and innovation management3. Digitalization and robotics |
| Facts, Trends & Outlook | 4. Future of cleaning |
| | 5. Conclusion and recommendations |
| | |
| | |
| | |

Status quo and current trends



Importance of different topics according to the interviews:

Digitalization



Robotics



Automation of cleaning processes



Staff shortage and qualification



Sustainability



Controlling issues



High relevance \(\begin{aligned}\) Low relevance



The industry's major trends and most pressing matters

- Digitalization and robotics are currently the most important topics discussed by manufacturers and technology providers in Europe
- While digital products and solutions are already in use, robotics is perceived as a future topic.
- Automation of cleaning processes will go along with reliable cleaning robots.
- Staff shortage and qualification are the major challenges BSCs face.
- Sustainability is a main priority that affects all segments. This development will continuously increase in its importance.
- The optimization of controlling processes to ensure the quality of cleaning results with digital solutions is also discussed.

Status quo and current trends



Trends by segment

Machines



- Robotics
- Autonomous cleaning
- Sustainability

Equipment



- Better ergonomics
- Digitalization

Chemicals



- Sustainability
- Dosing
- Value-added services

Facility Management



- Staff shortage and qualification
- Improvement of industry reputation

Most important trends in the following cleaning segments

- Considering machines, the most important trends are autonomous cleaning with robotics and reduced chemical use to meet sustainability requirements.
- Improvement in ergonomics for the well-being of cleaners as well as for the reduction of downtimes is a major trend across equipment.
- In the segment of chemicals, sustainability is a core topic, as well as the offer of value-added services from the manufacturers.
- The most important issues for BSCs are digitalization, process automation and staff qualification.

Biggest challenges and problems

- Staff shortage is still one of the biggest challenges the industry faces. Staff qualification is often poor with many lateral entrants.
- The reputation of the cleaning industry is still not very strong outside the sector. Measures like daytime-cleaning or the utilization of "Cleanfluencers" could help to optimize the awareness toward cleaning. Also the Corona Crisis might have an impact.



Status quo and current trends



Notable guotes from the expert interviews

"Staff shortage, language barriers, sustainability and education are the most discussed matters in the industrv."

Product manager - Manufacturer

"Cleaning companies do not have a high reputation outside the industry. This should be changed. The industry needs more "Cleanfluencers." General manager - Cleaning company

> "There is an extensive talk about robots, but they should get better to adapt toward different cleaning environments."

General manager - Cleaning company

"Major trends according to BSCs are digital time recording, digital cleaning plans and increasing sustainability in tender business."

General manager – Dealer of cleaning products

Status quo and current industry trends

"Sustainability and 'Green Cleaning' are very important topics. Main issues in this context are dosing of chemicals and sustainable inaredients." General manager - Manufacturer

"Robotics can reduce personnel deployment, but the technology is not ready for the market yet." General manager – Manufacturer spare parts and accessories

"Chemicals are only a means to an end and not a field with high innovation potential."

Head of innovation - Manufacturer

"Better ergonomics of products can relieve employees and reduce downtime."

Product manager - manufacturer

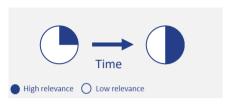
Contents



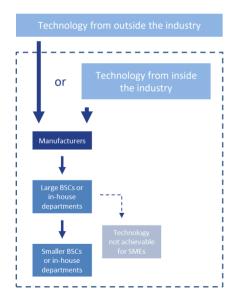
| Innovation management in the European cleaning industry Facts, Trends & Outlook | Status quo and current trends Innovations and innovation management |
|---|--|
| | 3. Digitalization and robotics4. Future of cleaning |
| | 5. Conclusion and recommendations |



Innovation power



Top-down approach



Innovation of the industry

Sources: Interviews DTO Research

- The industry is described as less innovative and rather conservative but a slight change of opinion in the recent past is apparent.
- Cleaning is influenced more and more by technologies from outside the industry which increases the number of innovative products and services.
- Often new technologies are only used by large BSCs or in-house departments which limits their market penetration.
- In many cases product improvements were declared as innovative while real innovation often only took place in niche segments.

Most important innovations in the last five to ten years

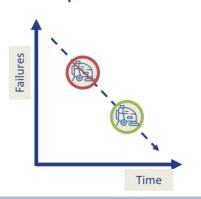




Innovation triangle



Failures are part of the natural innovation process



Highest potential for new innovative products or services

- Innovations that reduce staff and increase process automation seem to have the highest potential in the market due to the cost structure of BSCs.
- Products focused on sustainability and environmental protection are also increasing in importance.
- Digital solutions that improve controlling or optimize the cleaning process (e.g. sensors or chips in cleaning equipment).

Products/services that were not as widely adopted as initially expected

- First generations of cleaning robots (floor cleaning)
- Robots for façade or solar cleaning as well as cleaning drones
- Nanotechnology

DTO Research Cleaning Markets



Notable quotes from the expert interviews

"Companies do not act proactively. They more react on changes of the market situation. Companies only do what they have to ."

General manager – Dealer cleaning products

"Product or service innovations that reduce staff and increase the process automation have the highest potential."
Product manager - Manufacturer

"Often people are not willing to pay for innovative products if the additional benefit is not clear."

General manager - Cleaning company

"The industry is in a change process. In the past it was very conservative, but now it is more open toward innovation. The trend towards robotics is especially changing the minds of people."

Head of Marketing – Technology provider

Innovation power of the industry, success stories and failures

"The industry is not very innovative. Most innovations come from other industries and were adapted toward the cleaning industry."

Head of innovation - Manufacturer

"It is difficult to say when an innovation has failed because innovation is an evolution process and not a one-time event."

Innovation specialist – Cleaning company

"For me, an automated mop is a real innovation. But in fact, the number of real innovations is limited. Often these are mainly product improvements."

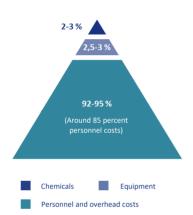
General manager - Cleaning company

"Large spaces with a high number of cleaners is a good environment to justify the investment in robotics."

Head of marketing – Technology provider



Cost structure maintenance cleaning



Overall success criteria for innovation



Staff reduction



Time savings

Cleaning facilities that experience the largest adoption of new technologies

- Large spaces (e.g. in malls, logistic centers, airports etc.) which need a high number of staff for cleaning are especially described as environments that experience the largest adoption of new technologies especially in robotics.
- This may not be surprising, as personnel costs are the most significant item in the cost structure of a BSC and the target is to reduce staff.

Most important product features for successful innovations

- Simple and intuitive handling
- Real problem solving and not only nice to have
- Robustness and durability
- Clear unique selling proposition (USP)
- Cost efficiency
- Scalability
- Easy to transport









R&D activities and staff qualification





Basic questions of cleaning



Innovation, R&D activities and staff qualification

In opposite to smaller companies most large manufacturers and BSCs have well-educated staff to support R&D activities.

Consideration of BSCs and in-house cleaners' requirements in the innovation process

- Many products are developed without paying enough attention to market requirements.
- There is a lack of communication with the BSCs.
- BSCs are the professionals that know best where they have challenges and should be integrated in the innovation process.
- In most cases, only requirements of large BSCs are considered, but to truly gain more accepted implementation, considering medium-small BSC needs is required.





Who is paying most attention to innovation



Importance of R&D cooperation



Dissemination in practice



Availability of sufficient innovation strategies

- Some companies have a sufficient innovation strategy, but not all.
- Knowledge is often not systematically shared within the companies to support a holistic innovation process.
- There is often a more local thinking in the market. As a result, requirements of companies in other countries are not taken into consideration. There is still lack of global exchange of ideas, collaboration and information.

Importance of R&D cooperation

- R&D cooperation is seen as very important, but in practice this does not take place often.
- For example, the exchange between machine manufacturers, chemical manufacturers, universities, companies from outside the industry and BSCs should be improved.





Notable quotes from the expert interviews

"Practical development in cooperation with the BSCs is very important for the success of innovations."

General manager - System integrator

"Many products are developed without paying enough attention to market requirements. There is a lack of communication with the BSCs."
Product manager - Manufacturer

"Innovation takes time.
Furthermore, support within and from outside the organization is needed."

Innovation specialist - Cleaning company

"There is an overestimation of technology at the moment according to the short-term impact. For the long-term there is an underestimation."

General manager - Facility management

R&D and innovation strategy

"Manufacturers are often focused too much on themselves. Often products are developed without meeting the market requirements."

General manager - Manufacturer

"Especially during the past years, innovations have become more important due to the pressure in the cleaning industry."

Head of marketing – Technology provider

"The market is often focused too much on me-too products."

General manager – Cleaning company

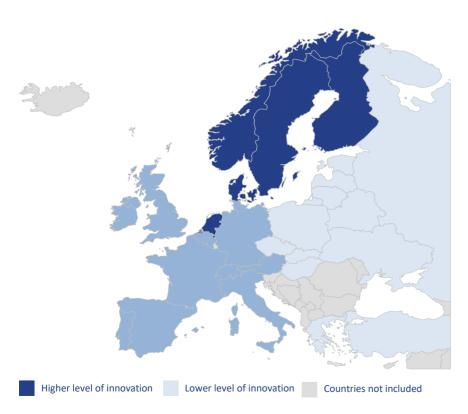
"R&D cooperation is very important! In practice there should be much more of it. Smart-building and cleaning, for example, should grow together."

General manager – Service provider

DTO Research
Cleaning Markets



Differences across European markets



- Countries can be roughly classified in 3 categories according to their acceptance of innovation.
- Germany is in a transformation phase from a very conservative market to a more open-minded cleaning culture.
- The Nordic countries and the Netherlands are open to innovations, especially in the case of sustainability and visible cleaning.
- Eastern countries can be more-orless seen as follower with limited innovation power.



Notable quotes from the expert interviews

"France and the Netherlands are very open for innovation." Innovation specialist – Cleaning company

minded cleaning culture."

Product manager - Manufacturer

"In Scandinavia, for example, cleaning is more visible. In Germany cleaning is mainly done outside the normal business hours"

Head of innovation - Manufacturer

"Germany is very strong in product development. Spain and Greece are large markets, but not so technology-driven. France is a bit restrictive due to strong unions. UK is a question mark due to Brexit."

Head of innovation - Technology provider

"In general, smaller countries have a higher innovation power."

General manager - Manufacturer

Country specific differences

"Germany is in a transformation phase from a

very conservative market to a more open-

"The Netherlands are much more open toward innovation. The German cleaning industry is more conservative which leads to problems during the implementation of new products."

General manager - Manufacturer

"Nordic countries are very innovative regarding sustainability. Eastern countries are mainly follower with limited innovation power."

General manager – Dealer for cleaning products

"Market places are very similar. Products of huge manufacturers are strong all over the continent.."

General manager – Cleaning company

Contents



| Innovation management in the European cleaning industry Facts, Trends & Outlook |
|---|

- 1. Status quo and current trends
- 2. Innovations and innovation management
- 3. Digitalization and robotics
- 4. Future of cleaning
- 5. Conclusion and recommendations

Digitalization and Robotics



Current market penetration













Future importance of robotics and digitalization



Current developments in the field of robotics and digitalization

- The industry is just beginning to adopt robots at scale.
- Increasing functionality and flexibility of these machines will support mass adoption in the future.
- Data protection and data utilization are very critical issues at the moment.
- While digital solutions are already implemented, robotics are still in a testing phase.

Importance of these technological innovations for the next decade

- There has been a consensus that the role of robotics and digitalization will play a greater role in the future of cleaning.
- Robotic technology is fitting for cleaning environments with large spaces like warehouses or large areas with carpets.
- Large BSCs are the first players in the market who will benefit from the new technologies.



Digitalization and Robotics



Most important and needed innovations:

- Open technology platform for Internet of Things (IOT)
- Robots with different features to perform different cleaning tasks (e.g. vacuum, scrubbing and floor sealing)

Most important opportunities and challenges:

- Adaptation of robots for different cleaning environments
- Improvements in artificial intelligence
- Product individualization (toward user requirements and country specifics)
- Investment and financing

How the different segments will benefit from these technologies the most and why

- In general, all segments will benefit but with very different intensities.
- Especially large BSCs will have a competitive advantage with new technologies because they have the resources to implement them.
- It might be difficult to get SMEs to invest more in digitalization and automation if it is resource-intensive and complex.

Manufacturer







- Increase turnover
- Creation of an USP
- Data collection for new services.
- Higher customer loyalty

BSCs



- Higher process efficiency and ongoing optimization
- Improvement of controlling
- Reduction of staff and cost optimization



Digitalization and Robotics



Notable guotes from the expert interviews

"All will benefit from new technologies due to cost optimization and a higher process efficiency." General manager - Cleaning company

"In the future, robotics and digitalization are very important, but to improve the utilization it will be necessary to use open standards and an open platform."

Product manager - Manufacturer

"Data protection and data utilization are critical issues." General manager - Manufacturer

"Manufacturers and large BSCs who have the resources to implement the new technologies benefit. Smaller BSCs are less open."

General manager - Manufacturer

Status quo and trends in digitalization and robotics

"Digitalization is one of the most important topics now and for the future."

General manager - Manufacturer

"Robotics will not replace humans in all cleaning tasks. They will need much more features than they have now to be interesting for the massmarket."

General manager – Dealer for cleaning products

"Especially large BSCs benefit from new technologies. Smaller and middle-sized ones often do not have the resources for technology implementation."

Head of marketing - Technology provider

"Robotics is not a stand-alone technology. Humans and robots will have to work together."

Head of innovation - Technology provider



Contents



| Innovation management in the European cleaning industry Facts, Trends & Outlook | Status quo and current trends Innovations and innovation management Digitalization and robotics Future of cleaning Conclusion and recommendations |
|--|---|

Future of cleaning



Main drivers for technological development:

- Cost optimization
- Legal changes
- Creation of synergies
- Internationalization
- Competitive pressure
- Process efficiency

Top countries/regions for innovations in robotics and digitalization:





How the cleaning industry will change in the future

- The way of cleaning will change, but not so fast. Large spaces will be cleaned by robots but not everything can be automated.
- Automation will be implemented step by step, however, in 10 years cleaning will still be mostly done by humans.
- Cleaning and building infrastructure will merge slightly.
- In general, cleaning will become much more sustainable and visible.

Role of Europe according to new technological developments and importance of other regions

- North America and Europe will be the main drivers of innovation in the industry, but the role of Asia is emerging very fast.
- In Asia, developments are often much faster than in Europe.
- In the past, products were often copied in Asia. Now, however, their influence has started to increase.



Future of cleaning



Notable quotes from the expert interviews

"Much more automated processes and less work done by humans. Also cleaning in the future will be more focused on environmental protection."

General manager - Manufacturer

"Where it is possible, robots will replace the cleaning staff. Also plastics and chemicals will be reduced to a minimum." Innovation specialist – Cleaning company

"Cost pressure, optimization of the cleaning process, IOT, and digitalization will drive the industry."

General manager - Cleaning company

"The way of cleaning will change but not so fast. Automation will be implemented step by step. In 10 years cleaning will be still mostly done by humans."

Product manager - Manufacturer

"Activity based cleaning and cleaning-on-demand based on data will increase."

General manager - Cleaning company

The future of cleaning

"Process efficiency according to huge spaces and critical areas e.g. in hospitals will drive the robotic business."

Head of innovation - Manufacturer

"An ongoing consolidation trend in the industry will lead to a limited number of players."

General manager – Distributor of cleaning products

"Automation will increase as well as the utilization of sensors e.g. for dirt detection. Also IOT will become more important."

Head of marketing - Technology provider

Contents



| Innovation management in the European cleaning industry Facts, Trends & Outlook | 1. Status quo and current trends |
|---|---------------------------------------|
| | Innovations and innovation management |
| | 3. Digitalization and robotics |
| | 4. Future of cleaning |
| | 5. Conclusion and recommendations |
| | |
| | |
| | |

Conclusion and recommendations



Openness toward innovation



Need for innovation



Adoption rate of innovations



Need for R&D cooperation



Future importance of new technologies



Future importance of qualified cleaning staff



Key learning points for the industry

- The industry is much more open to innovation but not all industry segments benefit the same way.
- There is high competitive pressure on the manufacturers and technology providers to establish new products or services.
- Many of the developments in the past were not seen as innovations by the BSCs because the added-value and product USP were not understood.
- Networking and R&D cooperation within the industry is mentioned as essential, but a global platform for innovation is missing.
- The way of cleaning will change in the future, but how fast this will happen highly depends on cooperation of companies within and from outside the industry.
- Digitalization and robotics will be very important in future cleaning, but well qualified staff and human machine interaction are also significant success criteria.







Contact ISSA

Manuela D'Agata ISSA EMEA Office Mombacher Str. 68 55122 Mainz Germany

+49 6131 / 636 782-0 emea@issa.com www.issa.com/emea

DTO Research Cleaning Markets

Contact Cleaning Markets

Michael Di Figlia
DTO Research – a brand of DTO Consulting GmbH
Benrather Schlossallee 33
40597 Düsseldorf
Germany

+49 211 / 179 660-0 info@dto-research.de www.dto-research.com