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Reinventing the Flow: Adaptive Strategies in a Disrupted Sanitation

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ABSTRACT

The acceleration of digital transformation has triggered significant disruption in the sanitation industry, creating new challenges as well as opportunities for companies to innovate. This study aims to examine how a multinational company in the sanitation sector operating in Indonesia responds to industrial disruption through product innovation strategies, digital transformation, and the application of sustainability principles to maintain its competitiveness. In particular, this study explores the strategic approach and reconfiguration of business models adopted in the face of market and technological changes. This research uses a qualitative method with a literature study approach and semi-structural interviews with the company's management. Data analysis is carried out thematically with stages of open coding, axial coding, and selective coding to build a deep understanding of the company's internal practices and dynamics. The results show that the company has successfully developed smart technology-based sanitary products, implemented digital strategies for marketing and customer service, and integrated circular economy principles in its production processes. In addition, the company also implements various business model reconfiguration tactics such as modular design, strategic collaboration, and the use of predictive technology in operations. This study concludes that the integration between digitalization and sustainability is a key factor in maintaining competitiveness in the midst of industrial disruption. This study has limitations in the scope of a single case study and is recommended to be developed in cross-industry research or with a longitudinal approach to improve generalization.

Keywords: Technological disruption, Product innovation, Digital transformation, Sustainability, Sanitation industry.

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INTRODUCTION

The development of digital technology has been a major driver of the transformation of various industries in the last decade. In the midst of increasingly massive technological disruption, the sanitation industry, which was previously considered slow to adopt change, is now faced with the demand to innovate and respond to changes quickly and strategically. The presence of technologies such as the Internet of Things (IoT), artificial intelligence (AI), and big data is beginning to change the way consumers use, buy, and evaluate sanitary products. On the other hand, the pressure on sustainable business practices is increasing as environmental awareness increases, government regulations become more

stringent, and consumer preferences are increasingly critical of the social and environmental impact of the products they use.

In this context, companies are required to not only create products that are functional, but also able to offer added value through technology, resource efficiency, and contribution to environmental sustainability. The sanitation industry is no longer limited to the hygiene aspect alone, but has become part of smart solutions for future households and buildings that are more efficient, healthy and environmentally friendly. Therefore, the topic of the company's adaptation and innovation strategies in responding to disruption in the sanitation industry is very relevant and important to be examined. In particular, it is interesting to examine how a multinational company operating in the sector responds to change with a comprehensive and integrated strategic approach. Understanding the patterns and practices applied by the company not only enriches the treasure trove of literature in the field of strategic management and innovation, but also provides practical insights for other industry players who are facing similar transformation challenges.

A number of previous studies have discussed how digital technology affects business models and corporate strategies in general. Christensen (1997) introduced the concept of disruptive innovation which highlights how new technologies can replace old business models and fundamentally change the competitive landscape. Research by Chesbrough (2006) proposes the importance of open innovation as a strategy to accelerate the development of products and ideas through external collaboration. In the context of sustainability, Hart and Milstein (2003) emphasize the importance of creating sustainable value through innovation that considers social, environmental, and economic aspects simultaneously.

More specifically in the context of digitalization, Porter and Heppelmann (2014) explain how digitally connected products are changing competition and creating new needs in the industrial value chain. Nambisan et al. (2017) also highlight that digital transformation is not only a tool of efficiency, but also as a driver of fundamental change in business innovation and relationships with consumers. These studies show that digital technology has a far-reaching transformative impact on a company's strategy, operations, and organizational structure.

In the sanitation industry itself, several industry have shown that digitalization and sustainability are at the top of the company's agenda (McKinsey 2021, WEF 2022). Smart toilet technology, sensor-based water use monitoring systems, and circular economy approaches have begun to be implemented by large companies. However, academic studies on how companies integrate these approaches comprehensively in the face of sanitation industry disruption are still limited, especially those using case studies of global companies operating in emerging markets such as Indonesia.

While the literature on digital innovation and business sustainability has grown rapidly, there is still a gap in understanding how sanitation companies specifically design and implement adaptive strategies for disruption. Existing research tends to discuss digital transformation and sustainability separately, whereas in practice, these two aspects are often integrated with each other and form the cornerstone of the company's overall strategy. In addition, an in-depth case study approach on how a company reconfigures its business model (through product innovation, digitalization, and sustainability simultaneously) in the context of the sanitation industry is still rare.

Especially in Indonesia, academic studies that discuss the strategic response of multinational companies to disruption in the sanitation industry are still relatively minimal. In fact, global companies operating in the Indonesian market often face typical local challenges, such as environmental regulations, limited digital infrastructure, and highly variable consumer preferences. Research that highlights the adaptation strategy of a multinational company in this sector can make a significant contribution in filling the literature gap. In addition, this study also has the potential to present a relevant and applicable managerial perspective for local companies that are trying to navigate a similar transformation amid domestic market dynamics.

Considering the urgency of this issue and the limited previous studies, this study is focused on a strategic analysis of how a multinational company in the sanitation sector responds to industrial disruption through the application of technological innovation, digital transformation, and sustainability principles. The study also takes an in-depth look at the various business model reconfiguration tactics that companies use to stay relevant and competitive in the face of changing global market dynamics.

Based on this background, the research questions asked in this study are: How does a multinational company in the sanitation sector adapt its business strategy in response to industrial disruption through product innovation, digitalization, and the application of sustainability principles? What strategies do the companies use to maintain competitiveness and create long-term value amid technological changes and ongoing shifts in market preferences?

LITERATURE REVIEW

Disruptive Innovation in Traditional Industries

The concept of disruptive innovation was first introduced by Christensen (1997) to explain how new technologies that were initially imperfect could gradually displace the dominant players in an industry. Disruptive innovations often do not compete directly with existing technologies, but rather target neglected market segments, then grow slowly until they dominate the main market. In the context of traditional industries such as sanitation, the presence of technologies such as the Internet of Things (IoT), smart devices, and artificial intelligence has begun to reshape the previously stable industrial structure. Products such as smart toilets, automatic taps, and water consumption monitoring systems are real examples of how disruptive innovations are starting to replace conventional products.

Research by Porter and Heppelmann (2014) also underlines that digitally connected products create new added value, both from the user and company sides. This added value comes not only from technical functionality, but also from improved efficiency, data integration, and personalization of the user experience. This means that disruption in the sanitation industry is not only a matter of replacing old technology, but also involves transforming the way of thinking about the value and benefits of a product.

Digital Transformation as an Adaptive Strategy

Digital transformation is defined as an overarching process in which organizations adopt digital technologies to transform the way they operate and create value for customers (Nambisan et al., 2017). Previous research has shown that digital transformation can be an effective strategic response to uncertainty and market dynamics. Within the framework of dynamic capabilities theory (Teece et al., 1997), companies that are able to integrate new technologies quickly and effectively can gain a sustainable competitive advantage.

Digitalization also allows for integration between various corporate functions, such as manufacturing, logistics, marketing, and customer service. For example, the implementation of cloud-based ERP systems and predictive maintenance allows for higher operational efficiency. On the marketing side, the use of e-commerce, social media, and data analytics helps companies understand consumer behavior more deeply. A study by Jacobides (2023) emphasizes that companies that build open and adaptive digital platforms will be better able to create a profitable business ecosystem in the digital age.

Although many companies are adopting digital technologies, challenges remain, such as internal resistance to change, limitations of technology infrastructure, and the need for new digital competencies. Therefore, digital transformation is not only about technology investment, but also changes in organizational culture and improving human resource capabilities.

Sustainability and Circular Economy in Business Strategy

The concept of sustainability in business has evolved from simply regulatory compliance to the company's core strategy. Hart and Milstein (2003) introduced a sustainable value model that emphasizes the importance of integrating environmental and social aspects into business innovation. In practice, this includes the development of energy-efficient products, the use of environmentally friendly materials, and the optimization of production processes to reduce waste and carbon emissions.

The circular economy approach, popularized by the Ellen MacArthur Foundation and later developed in the literature by Lüdeke-Freund et al. (2018), emphasizes the importance of creating a sustainable product cycle, from design to end-of-life. In the sanitary industry, this can be applied through the use of recycled materials, modular designs for long-term care, as well as the retrieval system of products that are no longer used.

Research by Fischer and Pascucci (2020) also states that the adoption of sustainability principles provides strategic value as more and more consumers consider environmental and social aspects in purchasing decisions. Nevertheless, implementing sustainability often poses challenges such as high upfront costs and the need for supply chain transparency. Therefore, the success of a sustainability strategy is highly dependent on the company's long-term commitment and their ability to align sustainability values with the business model.

Reconfiguration Tactics and Innovative Business Models

In the context of disruption, companies are not only required to innovate technologically, but also reconfigure their business models. Bohnsack and Pinkse (2017) developed a framework of reconfiguration tactics that includes three main approaches: compensating, enhancing, and coupling tactics. Compensating tactics aim to adjust products to suit new market regulations or expectations. Enhancing tactics focus on increasing product added value through innovative features. Coupling tactics emphasize the importance of building strategic partnerships to strengthen positions in the business ecosystem.

A resilient and flexible business model allows companies to survive amid market uncertainty and competitive pressures. Research by Johnson et al. (2008) and Casadesus-Masanell & Ricart (2010) shows that companies that proactively redesign their business models according to changes in the external environment will have a greater chance of maintaining a competitive advantage. In this case, the ability to integrate new technologies, adjust cost structures, and re-understand value propositions is key.

RESEARCH METHOD

Single Case Design

This study uses a single case study approach to in-depth analyze the adaptation and innovation strategies implemented by a multinational company in the sanitation sector operating in Indonesia. This approach is considered appropriate because it allows for an in-depth exploration of the context, processes, and internal dynamics of companies in responding to industrial disruptions. A single case study provides flexibility in exploring complex and contextual aspects that might be missed in quantitative approaches or comparative studies.

This approach aims to capture the strategic realities run by companies in the face of external pressures such as technological changes, regulations, and market demands. By looking at a single entity holistically, this study seeks to generate rich insights into how companies build adaptive excellence

through the integration of technological innovations, digitalization of business processes, and sustainability initiatives in its business models.

Data Collection

Data collection was carried out through a combination of desk research and semi-structural interviews. The literature study includes an analysis of official company documents, industry reports, academic publications, as well as relevant media articles to establish context and trace the evolution of the company's strategy. This secondary information is used to map out the initial framework for industrial disruptions, the company's strategic response, and the role of technology and sustainability in business transformation.

To complement the secondary data, semi-structural interviews were conducted with a key informant from the company's Informaton Technology (IT) department – who plays a central role in implementing digital transformation initiatives. This individual was selected due to their direct involvement in system integration, smart product development, and IT-enabled sustainability measures. To enhance the validity of findings, the interview data were triangulated with secondary sources, including official company documents, industry reports, and media coverage. Although only one informant was interviewed, thematic saturation was considered achieved when no new insights emerged after cross-verifying data with external sources and the interview responses, supporting the study's depth and internal consistency.

Data Analysis

Data analysis was carried out with a thematic based qualitative approach. The process begins with open coding, which is the identification and grouping of initial codes based on key themes that emerge from the literature and interview data, such as product innovation, service digitization, and sustainability strategy. This stage is exploratory in nature, with a focus on gathering as many relevant categories as possible.

Next, axial coding is carried out, in which the researcher identifies the relationships between categories and constructs a narrative structure that explains the relationship between elements in the context of business strategy. Finally, in the selective coding stage, the most relevant key themes are selected and developed into a core narrative that answers the research questions. This approach allows researchers to develop a complete, integrative, and contextual understanding of the adaptation strategies implemented by companies in the face of sanitary industry disruption.

The Case Company

The company that is the focus of this study is a multinational company engaged in the sanitation industry and has been operating in Indonesia for more than two decades. The company has major production facilities in the West Java region and serves a wide range of market segments from residential consumers to large-scale construction projects, including residential, commercial buildings, hotels, and apartments. With hundreds of employees, the company has an integrated value chain from production, distribution, to after-sales service.

The company's main focus is on the production and innovation of sanitary products such as toilets, sinks, showers, and other bathroom fixtures. In recent years, the company has been actively developing smart technology-based products such as smart toilets and automatic water-saving systems, in response to digitalization trends and sustainability demands. In addition, the company also implements a digital transformation strategy through the development of an e-commerce platform, integration of cloud-based ERP systems, and customer service supported by chatbots and virtual showrooms.

To distribute its products, the company leverages a combination of modern retail channels and project networks. The retail channel includes large building materials stores and distributors spread across Indonesia, while the project channel is managed through strategic partnerships with property developers, architects, and contractors. On the other hand, the company also builds long-term relationships with the professional community and technology partners in order to expand its market reach and strengthen its competitive position.

Commitment to sustainability is an important part of the company's strategy. This is reflected in the use of environmentally friendly materials, energy efficiency in the production process, and the application of circular economy principles in waste management and recycling. The company is also actively updating its product design to comply with green building certification and water efficiency regulations that apply at the national and international levels.

RESULTS AND FINDINGS

This section presents key findings from case studies on how multinational companies in the sanitation sector are responding to industrial disruption through the integration of technological innovation, digitalization, and sustainability principles. The findings are divided into three main areas of business model—value creation, value delivery, and value capture—each of which reflects the depth and breadth of the company's strategy in the face of external pressures.

Value Creation: Product Innovation and Process Optimization

The company shows a strong focus on developing technology-based sanitation products, such as IoT-based devices capable of monitoring water usage, detecting leaks, and connecting with smart home systems. These innovations not only strengthen the value proposition for consumers but also reinforce the company's position as a pioneer in sustainable sanitation solutions.

In addition to products, the internal learning process is also improved through the use of AI-based microlearning, which allows employees to access training independently and as needed. In the product editorial process and technical design, the company adopts algorithms that can identify errors, suggest design improvements, and optimize the prototype before it enters the mass production stage.

Automation of the product quality selection process has also been implemented, including consumption pattern analysis, automated leak testing, and product classification based on water efficiency standards. Nevertheless, for decisions that require creative and contextual interpretation, human intervention is still necessary, especially in adapting the design for local market segments.

Value Delivery: Personalization, Digital Channels, and Engagement

The findings show that companies are taking a data-driven approach to understanding customer behavior, including purchase history, product preferences, and digital interactions. Through this technology, the system can automatically provide personalized product recommendations, for example tailoring product choices to the needs of architects, contractors, or residential consumers.

In terms of distribution channels, the company combines traditional retail channels with an omnichannel strategy. Digital interaction is enhanced through e-commerce, chatbots, interactive catalogs, and virtual showrooms. In addition, the integration between digital platforms and offline activities (such as partner training and product presentations) forms a more cohesive and professional customer experience.

Community strategies are also an important finding. The company encourages the formation of a community of users, partners, and industry professionals who can share information, provide product

testimonials, and disseminate new innovations. With this approach, customers become not only consumers, but also part of a broader knowledge ecosystem.

Value Capture: Efficiency, Profit Simulation, and Adaptive Business Models

The application of digital technology also contributes significantly to improving cost efficiency and strategic planning. Cloud-based ERP systems are used to track inventory in real time, project demand, and reduce production waste. In addition, predictive maintenance is applied to the production line to prevent machine breakdowns and reduce costly downtime.

Companies are also starting to implement AI-based profitability simulations, which are able to estimate the financial impact of various business scenarios—for example, new product launches, market expansions, or changes in raw material prices. This makes it easier for management to make fast and data-driven decisions.

In terms of monetization, companies are starting to explore new business models such as subscription-based services, custom publishing, and modular products. This approach is considered more flexible to customer needs while opening up new revenue streams. However, its implementation is still selective and requires continuous evaluation to keep it in line with brand identity and local market preferences.

Table 1. Main Areas of Business Model

Business Model Elements	Key Strategy Focus	Key Technologies	Human Intervention Still Needed
Value Creation	Product innovation, process efficiency	IoT, AI-assisted design, microlearning	Yes—for complex design evaluation
Value Delivery	Personalization, omnichannel, community	E-commerce, recommender system, chatbot	Yes—especially in project marketing
Value Capture	Cost efficiency, simulation, diversification	ERP cloud, predictive analytics	Yes—for strategic decisions

DISCUSSION

Challenges of Disruptive Innovation in the Sanitation Industry

The development of digital technology, changes in consumer behavior, and increasing attention to sustainability issues have brought great challenges to the sanitation industry. These changes not only touch the product side, but also affect the way companies design, manufacture, and distribute goods. Innovation is an urgent need, as modern consumers are no longer satisfied with just basic functionality, but also demand the integration of smart technology, aesthetic design, and eco-friendly features. In this context, companies engaged in the sanitation sector are faced with pressure to undertake a comprehensive strategic transformation to remain relevant in the midst of disruption.

Technological disruption has the potential to fundamentally change traditional business models (Christensen, 1997). In the sanitation industry, Internet of Things (IoT)-based innovations—such as smart toilets, water flow sensors, and automatic faucets—are increasingly in demand. These products offer convenience, water efficiency, and integration with smart home systems, in line with increasingly sophisticated consumer preferences. Companies that don't adapt quickly risk falling behind as the market moves quickly toward more adaptive and resource-efficient technologies. The demand for energy- and

water-efficient products, as well as those that meet international environmental standards, is increasingly dominating the market, both locally and globally.

Increasingly stringent regulations also magnify this challenge. Many countries now require water and energy efficiency standards in sanitation products. For companies that want to maintain their position in the global market, meeting these standards is an absolute requirement. In addition, digitalization and the growth of e-commerce platforms have changed people's consumption patterns. Sanitary products, which were previously only marketed through physical stores and conventional distribution networks, now have to compete in the digital space. Consumers expect fast, informative, and interactive shopping experiences—prompting companies to strengthen their digital presence and omnichannel strategies.

However, technological disruption not only brings challenges, but also opens up space for innovation and growth opportunities. Companies that are responsive to change can use this moment as an opportunity to accelerate their business transformation. Investing in research and development, strengthening strategic partnerships with technology startups, and integrating smart home solutions are important steps in maintaining competitiveness. In addition, the ability to map market trends and dynamically adapt to consumer preferences will determine the company's long-term sustainability.

Faced with an ever-changing industrial landscape, sanitation companies need to strike a balance between technological innovation and the resilience of their business models. As stated by Teece (2010), competitive advantage in the era of disruption is highly dependent on the company's dynamic capabilities in adjusting the strategy, structure, and value offered. Therefore, the ability to integrate new technologies without sacrificing quality, as well as align products with consumer expectations and environmental regulations, will be decisive for long-term success for companies in the sanitation industry.

Strategic Adaptation in the Face of Industrial Disruption

Significant changes in consumer expectations due to technological advancements such as the Internet of Things (IoT) and smart home systems are driving companies in the sanitation sector to make strategic adaptations. Consumers no longer only demand the basic functions of sanitary products, but also want smart features that offer convenience, efficiency, and ease of use. In response to this trend, the companies in this study designed products based on digital technology to meet the needs of a more modern and environmentally conscious generation of consumers.

Product innovation is the main pillar of the company's strategy in dealing with disruption. This is in line with Chesbrough's (2006) idea of the importance of open innovation and technology as a source of long-term competitive advantage. One of the innovations developed is an automatic cleaning system that not only improves hygiene, but also lowers water consumption, answering the need for resource efficiency and increasingly stringent regulatory demands. This innovation has received a positive response from consumers who are now increasingly critical of the sustainability and product quality aspects.

In addition to focusing on innovation, the company also implements a product diversification strategy to reach a wider market segment. Products are developed by adjusting features, design, and price according to the preferences of various consumer groups—from the premium segment that wants high aesthetics and advanced technology, to the mid-range segment that considers the price aspect more without sacrificing quality. This strategy allows the company to strengthen market penetration and build long-term relationships with a diverse customer base.

In the face of changes in shopping behavior, companies are strengthening their digital approach through the use of e-commerce and social media platforms. Data-driven marketing campaigns are used

to recognize customer preferences in real-time, allowing for personalization of product recommendations and improved user experience. This strategy not only increases marketing effectiveness, but also helps companies maintain brand relevance amid increasingly dynamic competition in the digital space. In addition, customer service is also digitally transformed through an online system that makes it easier for consumers to get technical support, consultation, and product information without having to come to a physical store.

Sustainability is an integrated strategic component in the company's business model. Water-saving technologies, such as dual flush systems, as well as the application of circular economy principles through the use of recycled materials and the reduction of production waste reflect the company's commitment to environmental responsibility. This approach is in line with the concept of a triple bottom line that combines economic, social, and ecological considerations in business strategy. On the other hand, the company is also expanding into new markets that are growing rapidly, by adjusting the design and marketing of products to align with local characteristics. Collaborations with startups and research institutions are part of a sustainable innovation strategy that allows companies to continue to thrive in a rapidly changing industry landscape.

Reconfiguration Tactics for Sustainable Business Growth

In the face of the changing dynamics of the sanitation industry, the company in this study applied reconfiguration tactics as developed by Bohnsack & Pinkse (2017), namely compensating, enhancing, and coupling tactics. This approach is used to ensure business sustainability while increasing competitiveness in the global market.

Table 2. Reconfiguration Tactics

Configuration Tactics	Description	Implementation Examples
Compensating tactics	Adjust products to be more efficient and compliant with industry regulations	Water & energy saving technology in every sanitary product (e.g. dual flush)
Enhancing tactics	Increase product added value through innovative features	Smart toilet with IoT, automatic flush, and AI-based monitoring
Coupling tactics	Establish strategic partnerships to strengthen the business ecosystem	Collaboration with property developers and the smart home industry

One form of enhancing tactics applied is product innovation based on smart technology, such as shower toilets with automatic features, heating, and digital controls, which are designed to provide comfort as well as energy and water efficiency. Sensor and IoT technologies are also developed to adapt water use adaptively to user behavior. This strategy is in line with the preferences of modern consumers who prioritize hygiene, efficiency, and futuristic design.

For compensating tactics, the company adopted a modular system in product design, allowing consumers to choose features as needed without having to replace the entire unit. This strategy not only increases product flexibility, but also helps reduce waste and excessive use of raw materials. On the other hand, the application of circular economy principles—through the use of recycled materials and resource optimization—Is an important step in building a more environmentally friendly production process.

Through coupling tactics, the company strengthens collaboration with technology partners and startups in developing digital solutions and expanding market reach through e-commerce platforms. The development of digital portals and the use of AI for customer service are also part of the digital transformation that supports operational efficiency and quality of user experience.

With the combination of these three tactics, the company has not only successfully adapted to industrial disruption, but also created a more resilient and future-oriented business model. This approach proves the importance of dynamically reconfiguring strategies to maintain relevance, increase innovation, and strengthen the commitment to sustainability in the long term.

Digital Transformation and Sustainability as a Competitive Advantage

Digital transformation and commitment to sustainability have become the strategic foundation of the company in responding to market changes and strengthening its competitive advantage. Through an omnichannel approach and the use of technology such as virtual showrooms, customers can now explore products interactively before making a purchase, strengthening consumer engagement both online and offline. How digital transformation affects business aspects can be seen in the following table.

Table 3. The Effect of Digital Transformation

Business Aspects	Before Digital Transformation	After Digital Transformation
Production & Efficiency	Manual manufacturing process, high water consumption	Production automation, use of AI for quality control
Marketing & Distribution	Depends on offline distributors	Digital-based marketing, Partner Portal & e-commerce
Customer Interaction	Conventional customer service	AI chatbots, IoT applications for product control

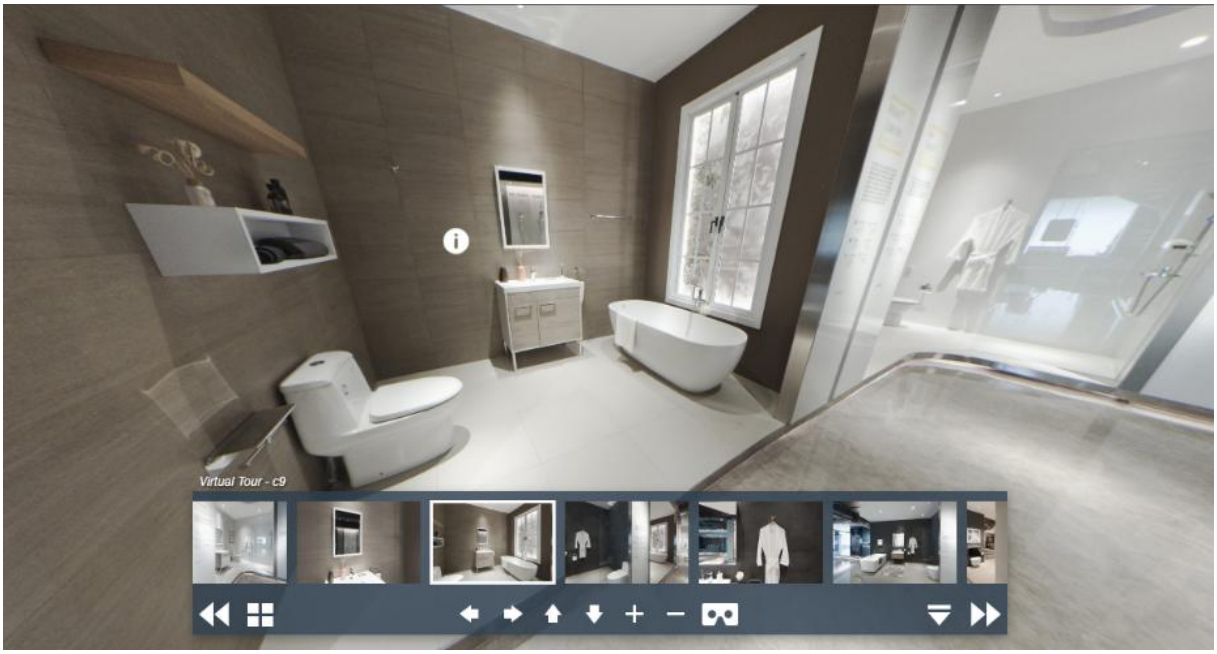

Figure 1. Virtual Showroom

On the sustainability side, the company integrates eco-friendly materials such as High Moisture Resistance MDF and meets LEED certification standards. Investment in renewable energy as well as water- and energy-efficient product design reflect the consistency of the strategy towards green business. This step not only meets global environmental regulations, but also creates added value for consumers who are increasingly concerned about sustainability issues.

IoT-based technologies are applied in products such as smart toilets that can be controlled through mobile apps. Features such as temperature control, water pressure, and integration with smart home systems (Google Home, Amazon Alexa) expand the value of the product while strengthening the company's image as a technology pioneer in the sanitation industry.

In the field of customer service, the company develops an AI-based chatbot platform to provide quick responses, product recommendations, and efficiency in the consulting process. Augmented reality (AR) technology is also used in mobile apps, allowing users to view product simulations in a real-world environment—which helps decision-making and reduces return rates.

Operationally, digitalization also encourages efficiency through cloud-based ERP systems and IoT sensors for predictive maintenance. This technology allows real-time monitoring of engine conditions, preventing downtime, and lowering maintenance costs. Overall, digital integration and sustainability principles make companies more adaptive, efficient, and ready to face the challenges of the industry.

CONCLUSION

The companies studied in this study have demonstrated strong adaptive capacity in the face of sanitary industry disruption. In the midst of accelerating technological change, increasing environmental awareness, and shifting consumer preferences, the company has not only been able to survive, but also continue to grow through innovation-based strategies, digitalization, and sustainability. The transformations carried out not only have an impact on improving efficiency and competitiveness, but also make a real contribution to environmental preservation and long-term customer satisfaction.

One of the company's key strengths lies in its ability to read market trends and respond quickly through smart product development, IoT integration, and an omnichannel approach. In the future, the integration of advanced technologies such as artificial intelligence and big data in product development and marketing strategies can be the main driver in creating solutions that are more personalized, efficient, and relevant to the needs of modern consumers. This technology also allows companies to optimize the value chain more precisely and proactively.

In addition to the technological aspect, the company also shows a strong commitment to sustainability principles through the adoption of environmentally friendly materials, energy efficiency, and the implementation of the circular economy. This approach is strengthened by consumer education strategies and collaborations with various stakeholders, including technology partners, research institutions, and environmental organizations. This cross-sector collaboration opens up space to create a wider social impact and strengthen the company's image as a responsible industry player.

In a global marketplace that increasingly demands transparency and accountability, a company's success is no longer measured only by business performance, but also by its contribution to social and environmental issues. Therefore, expanding the reach of innovation to reach different levels of society—both in terms of price and accessibility—will be an important factor in creating inclusive and sustainable growth.

With a solid foundation of strategy, an orientation to innovation, and a commitment to social and environmental responsibility, the company is solidly positioned to continue to lead the transformation of the sanitary industry. The journey towards a greener, smarter, and more inclusive future is not only a business opportunity, but also a form of contribution to sustainable global development.

While this study provides in-depth insights into how one multinational company responds to disruption in the sanitation sector, its findings are inherently context-specific. As a single-case qualitative study, the generalizability is limited. Future research could build on this by conducting comparative studies across different types of firms – such as multinational versus local companies – or exploring industry differences in other traditional sectors. Such comparative or longitudinal research

would help to identify whether the adaptive strategies observed here are widely applicable or context-dependent, enhancing the theoretical and practical relevance of this work.

RECOMMENDATIONS

Based on the findings and analysis, there are several strategic recommendations that can be considered by companies in the sanitation sector in responding to disruption and increasing competitiveness:

1. Strengthen the integration of advanced technologies such as artificial intelligence, big data, and the Internet of Things (IoT) not only in products, but also in strategic decision-making, supply chain management, and customer service.
2. Increase investment in research and development (R&D) to drive sustainable innovation, especially in product designs that are energy-efficient, environmentally friendly, and customizable to meet the needs of different market segments.
3. Develop a unified digital platform that integrates e-commerce, virtual showrooms, automated customer service, and feedback systems to create a consistent, personalized user experience.
4. Expand cross-sector collaboration, including with tech startups, research institutions, governments, and environmental organizations to accelerate the transformation towards a more sustainable and inclusive business model.
5. Encourage an educational approach to consumers regarding the importance of energy and water efficiency, as well as the use of environmentally friendly products, as part of the strategy to build loyalty and increase the company's social impact.

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