MIS Quarterly Executive

Volume 22 | Issue 3 Article 3

September 2023

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How WashTec Explored Digital Business Models

Many incumbent companies excel at digitally enhancing their existing business models (exploiting) but struggle to develop new digital business models (exploring). We describe how WashTec, a global leader in the car wash industry, successfully explored three digital business models using a four-phase exploration approach. The WashTec case offers incumbents a blueprint and gives rise to five recommendations for exploring new digital business models.[1,2]

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DOI: 10.17705/2msqe.00080

WashTec Successfully Deployed a Four-Phase Approach to Exploring Digital Business Models

> *"As a premium solution provider and equipment manufacturer for the car wash market, we realize that a change in innovation logic is needed: Pure excellence and incremental improvements of physical products are no longer enough. We see ourselves as digital pioneers and we thrive by complementing our high-quality products with digital solutions to generate even more sustainable value for our customers, partners and the entire car wash market."* CEO, WashTec

Driven by this vision, WashTec, a market-leading German manufacturer of car wash systems, set out to explore new digital business models that could push the company past the limits of its existing product and service core. Senior management sought novel ways to create, deliver and capture value using digital technologies.[3] The company's CEO formulated a clear problem statement with that objective in mind:[4]

> *"We are now faced with the challenge of leaving established paths and thought patterns to explore digital value propositions that fit WashTec and our customers—which is why a structured approach is needed to explore digital business models."*

To address that challenge, in 2021 WashTec developed a new exploration approach to identifying, designing and specifying suitable digital business models.[5] Over a period of a year, this four-phase exploration approach produced strategic, business and transformative outcomes, demonstrating the effectiveness of WashTec's approach.[6]

WashTec's senior management created a strategic blueprint in the form of a digital target picture that reflected the company's digital vision for the next five years. This blueprint outlined how WashTec would leverage digital technologies to complement its car wash systems with new digital value propositions and new customer interfaces while maintaining data sovereignty. The ambitious yet achievable blueprint helped the company navigate digital transformation and allocate resources effectively. Today, the blueprint provides a strategic common ground, shared language and understanding for the company's digital transformation initiatives. It has become a fundamental part of the company's strategy and is now prominently displayed in many employees' offices.

WashTec developed the three following concrete digital business models that address different value logics.

1. Automated Chemical Supply: This subscription-based digital business model enables operational excellence and improves an existing business model by automating the replenishment process for car wash chemicals. It is attractive to car wash operators because it reduces the effort to process chemical orders while also increasing WashTec's internal efficiency by eliminating the need for short-term express deliveries. WashTec trialed their Automated Chemical Supply service with high-automation-need customers in Northern Europe and the U.S. Customer churn rates were reduced by 50%. The increased level of service, customer loyalty and lock-in demonstrated the potential of this digital business model to reset the market

1 Blake Ives is the accepting senior editor for this article.

2 The authors thank Blake Ives and the members of the review team for their thoughtful feedback and guidance throughout the review process. We also gratefully acknowledge the Bavarian Ministry of Economic Affairs, Regional Development and Energy for its support of the Fraunhofer Blockchain Center (20-3066-2-6-13) project that made this article possible.

3 For further insights on how digital technologies reshape business models, see Kotarba, M. "Digital Transformation of Business Models," *Foundations of Management* (10:1), 2018, pp. 123-142.

4 Further strategic questions are addressed in: Matt, C., Hess, T., Benlian, A. and Wiesböck, F. "Options for Formulating a Digital Transformation Strategy," *MIS Quarterly Executive* (15:2), March 2016, pp. 123-139.

5 The idea for a comprehensive exploration of the car wash industry was stimulated by a framework for analyzing e-mobility business models by defining central business model patterns, customer segments and key values of electric mobility, and the systematic identification of their potentials. See Laurischkat, K., Viertelhausen, A. and Jandt, D. "Business Models for Electric Mobility," *Procedia CIRP* (47), 2016, pp. 483-488.

6 Developing WashTec's structured approach to exploration was a collaborative effort with the authors. See the Appendix for information on the action design research methodology used.

for wash chemicals, which historically was highly price competitive.

2. Digital Wash Platform: This second digital business model offered benefits for both car wash operators and consumers by connecting them through an app-based solution. A user-friendly platform allowed consumers to easily find car wash locations, view offerings, book washes and pay digitally. WashTec expected the Digital Wash Platform to be a highly scalable tool for attracting new car wash operators and consumers (i.e., wash clients). Operators would be able to generate additional revenue without requiring additional hardware. Early success stories were promising, with participating operators experiencing a 10% increase in washes sold.

3. In-Car Washing Services: The third digital business model enabled a new customer interface for the operators by offering car washes to consumers sitting in their cars. Traditionally, car washes have been sold over the counter, but this new service facilitates an automated interaction between the car wash system and a consumer's car, allowing the consumer to receive convenient directions to the nearest car wash location via the navigation device. While still futuristic, WashTec's management anticipates that interfaces with cars' operating systems will become a crucial prerequisite for successful business models in the age of connected and self-driving cars. WashTec built multiple prototypes and subjected them to rigorous user testing. Based on the feedback from operators and consumers, WashTec began evaluating strategic partnerships with car manufacturers in Germany and software players in the automotive industry.[7]

WashTec's exploration of digital business models proved effective in involving, engaging and inspiring employees in the company's digital transformation. Under the leadership of the CEO, participants wholeheartedly embraced the objective and direction of providing digital models, leading to widespread ownership and enthusiastic support. This transformative journey significantly enhanced internal collaborations, fostered a sharpened digital mindset and competencies within the organization, and garnered cross-industry recognition for excellence.[8]

WashTec's CEO summarized the outcomes of the exploration as follows:

> *"The structured approach enabled us to successfully steer our way in the digitalization journey with a clear digital target and to identify as well as specify three digital business models of special value to us. As a result, our company has a clear digital North Star, which makes it easier for us to communicate and collaborate across the organization."*

To guide other companies, we describe WashTec's four-phase approach to exploring digital business models. This approach can be adapted and customized by hardware-centric incumbent companies in general and machinery companies in particular based on the status of their traditional business activities and current digital business model exploration efforts. The experiences of and recommendations derived from WashTec's approach can guide executives seeking to lead their companies on a similar digital exploration journey.

Digital Business Model Exploration Challenges Faced by an Incumbent Like WashTec

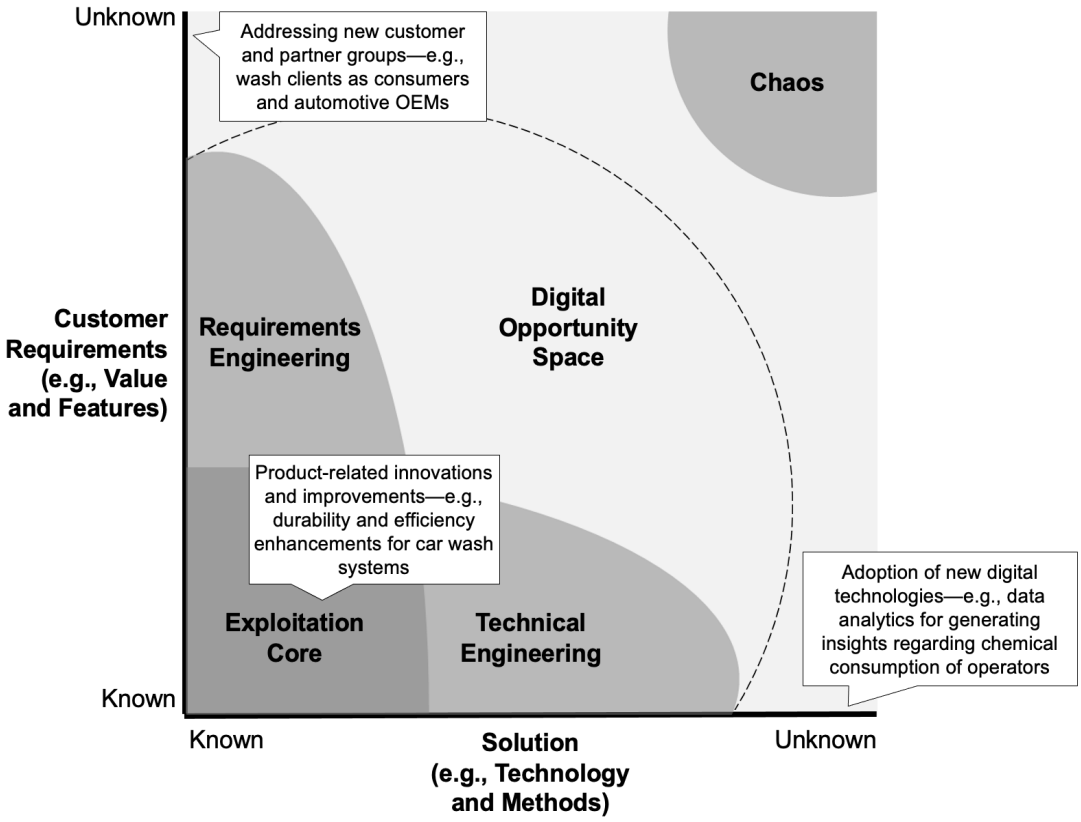
WashTec, a world leader in car wash solutions, has over 1,700 employees and operates in more than 80 countries. The company excels in creating and maintaining car wash systems and providing wash chemicals. Catering to both large gas station operators and supermarket chains, and smaller operators including private gas stations and wash parks, WashTec indirectly serves consumers. Its systems clean over two million cars daily.

As an incumbent in the car wash industry, WashTec strengths are a high level of customer

7 There are several key players in the software solutions market for the automotive industry and that thus have, or will, have linkages to the car wash domain. They include: 1) established automotive companies (e.g., Tesla, Mercedes); 2) established technology companies (e.g., Android Auto, Apple Car Play); and 3) emerging software provider with app-based solutions for payment and price comparison at gas stations (e.g., ryd—see https://www.ryd.one/de/ryd-pay/—and fillibri—see https://fillibri.com/).

8 WashTec received the "New Work Excellence" award from The Bavarian Employers' Associations for the Metalworking and Electric Industries, which represents the joint commercial, social and political interest of more than 3,300 member companies in Bavaria, Germany. For more information, see https://www.baymevbm.de/baymevbm/English/Home/Home.jsp.

Figure 1: WashTec's Digital Opportunity Space Mapped onto the Stacey Matrix



trust and loyalty and deep domain knowledge.[9] It is well-positioned to capitalize on digital technologies, such as the industrial Internet of Things (IIoT). For example, the broad connectivity of car wash systems at operator sites enables WashTec to retrieve operations data or to control the machines remotely. The existing digital interface to the machines provided a foundation for new digital business models.

WashTec's motivation for digital business model exploration was fueled by three forces:

1. Driven by a sense of ambition rather than a sense of urgency, the company aims to be a digital pioneer of the car wash market and shape its digital future
2. WashTec's largest customer group, the operators of "rollover systems"[10] at gas stations and supermarkets, have a growing need for automation and thus for digital solutions that allow them to operate without relying on specialized personnel
3. Competitive pressure from new market entrants. For example, the German start-up UUNO sells car washes via mobile app solutions,[11] disrupting the existing ecosystem of car wash manufacturers, operators and consumers. This pressure poses a challenge for an established hardware manufacturer like WashTec,

9 For more information on the opportunities that digital technologies present for established companies, see Oberländer, A. M., Röglinger, M. and Rosemann, M. "Digital opportunities for incumbents – A resource-centric perspective," *The Journal of Strategic Information Systems* (30:3), September 2021, Article 101670.

10 Rollover machines automatically move around a parked car for washing and drying. They are particularly suitable for gas stations as they require less space than tunnel machines, the second common type of automated car wash system. In the latter, the car is transported on a conveyor belt through several stations for washing and drying.

11 For information about UUNO, see: https://uuno.app/. Other software providers like ryd or fillibri offer solutions for digital payments at gas stations.

which must avoid becoming a pure commodity provider.

WashTec's Director of Digital Platform Engineering perceives the situation as follows:

> *"We recognize tremendous changes in technology and customer demands. In the car wash market, there are various start-ups and initiatives that are seeking to connect car wash consumers and car wash operators via digital platforms. Given that the car wash market is relatively stable, and innovation is rather slow, our growth potential lies in novel opportunities through digitalization by leveraging the strengths of our established market position, experience and competence."*

As an incumbent, WashTec discovered it faced daunting challenges when engaging in digital business model exploration.[12]

First, exploration must move beyond improving the company's product core and look toward broader goals within the reach of a digital pioneer. The Stacey Matrix[13] shows that WashTec needed to capture the demands of existing and new customers to develop suitable, innovative value propositions based on digital technologies (see Figure 1).

The company realized that common innovation methods either focused on technical improvements of the product core or creative exploration without strategic alignment.[14] Thus, WashTec ensured that its four-phase approach was characterized by effective idea generation and guided prioritization to assess new digital business model opportunities in line with its strategic priorities.

Second, WashTec's senior managers required that the exploration of digital business models for activities beyond the company's core products and services must yield measurable results, but the decision criteria were not limited to economic payoffs like cost reduction or increased sales. They included technical and strategic criteria to make informed choices on sustainable funding. Successful digital business models would need to be desirable to customers, technically feasible and have a viable, robust monetization strategy. Two risks may arise if prospective digital models are not evaluated along all three dimensions: overrated concepts may become nonviable, and promising ideas may be abandoned prematurely due to a lack of initial profitability.

WashTec aimed to avoid these risks by applying different methods in the four phases of its exploration approach that provide measurable results along the desirability, technical feasibility and viability evaluation dimensions.

WashTec's Four-Phase Approach to Exploring Digital Business Models

WashTec developed its own novel four-phase approach to exploring digital business model opportunities (see Figure 2). In Phase 1—*Activation*—WashTec created a digital target picture that included a strategic compass for exploring digital opportunities. In the second phase, *Inspiration*, the digital target picture was fleshed out with value proposition ideas, the most promising of which were conceptualized and prototyped in Phase 3—*Evaluation*. In Phase 4, *Monetization*, WashTec developed monetization strategies for validated value propositions and thus identified viable digital business models. While Phases 2 and 3 represent the design thinking core of the approach, WashTec included Phase 1 to emphasize an initial strategic focus and Phase 4 to provide a business focus to meet the challenges mentioned above.[15]

The four phases of the approach were each subdivided into two stages. In the first divergence stage, various options were developed. In the second convergence stage, these options were aggregated and evaluated to select the best

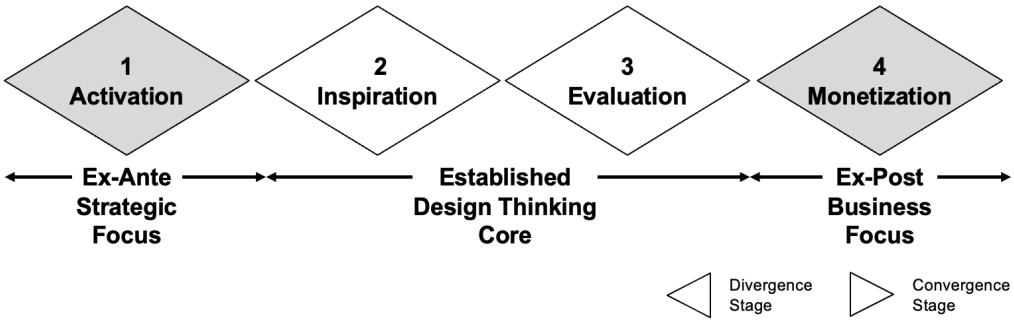
12 For insights on the challenge of identifying and prioritizing digitalization initiatives faced by incumbent companies, see Chasin, F., Kowalkiewicz, M. and Gollhardt, T. "How SME Watkins Steel Transformed from Traditional Steel Fabrication to Digital Service Provision," *MIS Quarterly Executive* (21:3), September 2022, pp. 205-225.

13 The Stacey Matrix for innovation helps identify the level of uncertainty and novelty in an innovation project and guides decision-making on appropriate strategies and actions. For more information, see Stacey, R. D. *Strategic Management & Organisational Dynamics*, Pitman, 1996.

14 For instance, structured and strategy-backed innovation processes (e.g., the stage-gate model) are tailored to the technological development of products and services through incremental enhancements.

15 For an article on the design thinking paradigm and innovation process, see Brown, T. "Design Thinking," *Harvard Business Review* (86:6), June 2008, pp. 84-92.

Figure 2: Four Phases of WashTec's Approach to Exploring Digital Business Models



ones supported by data-based assessments.[16] These measurable results enabled WashTec's management team to explore the digital opportunity space effectively by selecting and developing the most promising digital business models. We now describe each of the four phases in detail.

Phase 1: Activation

Recognizing that exploration efforts are usually more successful when initiated top-down,[17] in the Activation phase (see Figure 3) WashTec's senior managers developed a digital target picture that vividly depicted the company's digital vision and served as a strategic compass for navigating the digital business model exploration activities. The digital target picture included both an external and customer-oriented perspective and an internal and resource-oriented perspective. To identify the digital business model opportunities from the external perspective, WashTec used the *value pool* concept to identify different potential value propositions that address specific customer problems. It prioritized nine of the value pools and mapped the internal resources required to achieve the potential of each of these nine.

Creating a Strategic Compass to Navigate Exploration: WashTec used value pool assessment to identify the three digital business models listed earlier and to set the right priorities for exploration before undertaking a deep dive into the Inspiration phase. The resulting strategic compass, illustrated in Figure 4, shows the prioritized value pools mapped according to their distance from WashTec's current business (core, adjacent or radical).

WashTec clustered the prioritized value pools into three segments representing digital business model opportunities. One digital business model opportunity comprises several value pools contributing to the same strategic objective—e.g., enabling operational excellence and enforcing the existing business model. The business model opportunity in Segment 1 of WashTec's digital target picture can be addressed (among others) by the *chemical supply services* value pool because it contains several value propositions that improve the sales of chemicals. Related possible value propositions were detailed throughout the exploration journey, such as an automated replenishment process for car wash chemicals. Figure 5 provides an overview of the concepts of digital business model opportunity, value pool and value proposition, as well as their further development throughout the four-phase approach.

Prioritizing the Value Pools: WashTec's executives initially identified and assessed

16 Alternating between divergent and convergent stages is typical in innovation approaches. For more details, see Ulrich, F. "Exploring Divergent and Convergent Production in Idea Evaluation: Implications for Designing Group Creativity Support Systems," *Communications of the Association for Information Systems* (43:1), September 2018, pp. 101-132.

17 For details about the relative advantages of top-down and bottom-up innovation approaches, see Hutchison-Krupat, J. and Kavadias, S. "Strategic Resource Allocation: Top-Down, Bottom-Up, and the Value of Strategic Buckets," *Management Science* (61:2), February 2015, pp. 391-412.

Figure 3: Activation Phase

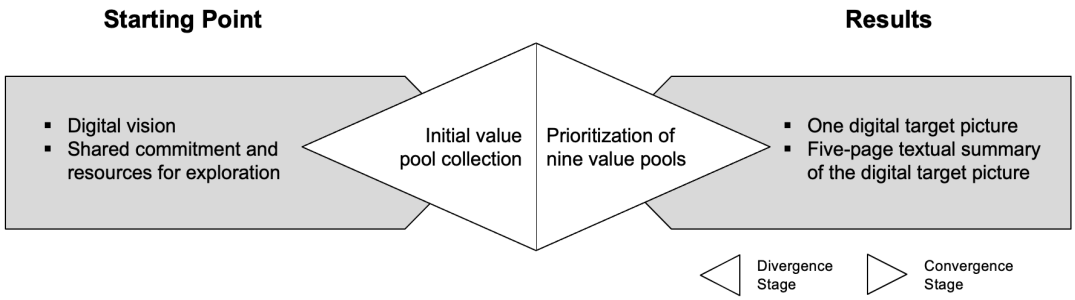
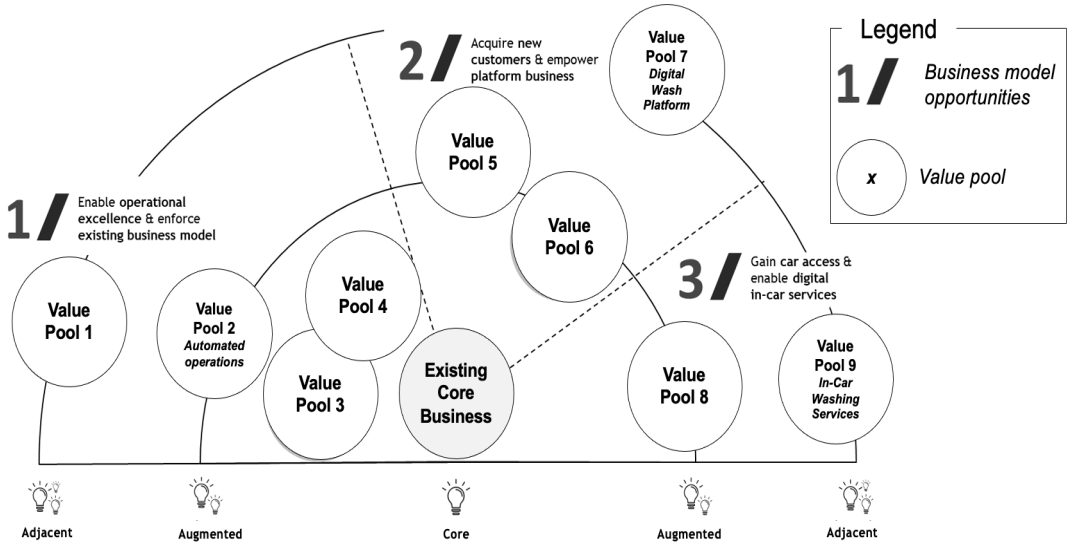


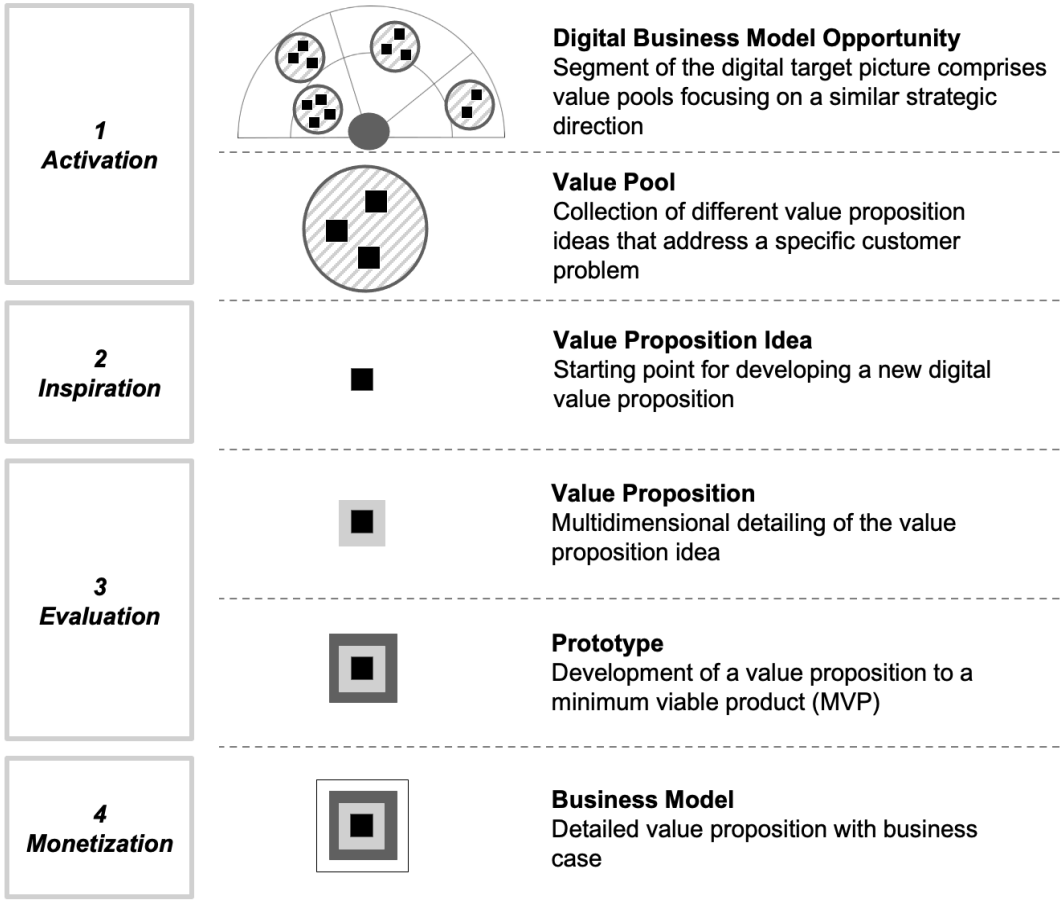
Figure 4: The Strategic Compass of WashTec's Digital Target Picture (External Focus)



17 relevant value pools derived from various customer problems. They held workshops to develop boundary conditions and aligned these with the company's corporate strategy to optimize the focus of digital business model exploration. For instance, they established the strategic boundary condition that WashTec's exploration activities must be related to the car wash domain, which led to the exclusion of all value pools predicated on washing solutions intended for any other equipment, such as bikes or trains. A secondary boundary condition was the target timeline of five years for realizing the digital business models in all eligible value pools.

To further prioritize the value pools with the greatest pay-off potential, WashTec assessed them along the three evaluation dimensions. First, the *desirability* of each value pool was ascertained bilaterally, meaning from WashTec's perspective as well as from the perspective of its various customer groups. Second, the *technical feasibility* of each value pool was evaluated by estimating the technical complexity of the necessary development and aligning it with the company's existing capabilities and resources. Third, the

Figure 5: Overview of Digital Model Exploration Concepts Throughout the Four-Phase Approach



viability of each value pool was analyzed by estimating the market size as well as the financial potential. Ultimately, WashTec prioritized nine value pools that met the boundary conditions and were assessed to be technically feasible, desirable and viable.

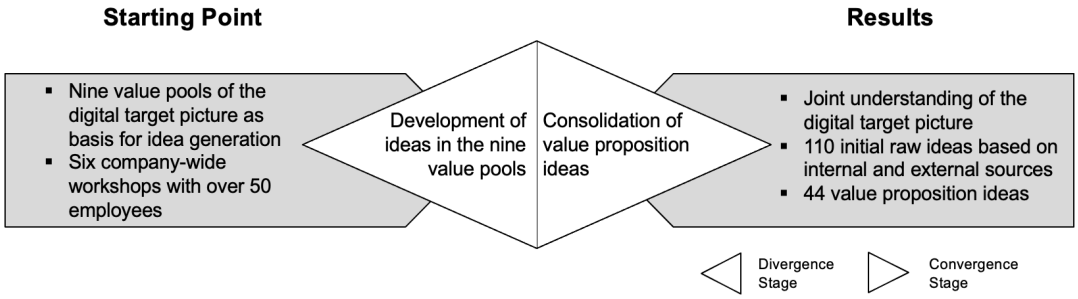
Phase 2: Inspiration

The Inspiration phase (see Figure 6) addressed two key objectives. The first was to communicate the digital target picture from the Activation phase to WashTec's workforce to create joint understanding and gain momentum. The second was to actively involve WashTec's employees across hierarchies and external input to contribute value proposition ideas on how to the company could exploit the prioritized value pools.

Actively Involving WashTec's Employees: To ensure the early engagement of the workforce, WashTec hosted six company-wide interdisciplinary and interactive workshops. These workshops were led by a senior manager who described the digital target picture and shared insights from the development process. Workshop participants were guided to generate value proposition ideas on how the company could tap into the prioritized value pools.[18] More than 50 employees across all company levels and

18 For details on value proposition design, see Osterwalder, A., Pigneur, Y., Bernarda, G. and Smith, A. *Value Proposition Design: How to Create Products and Services Customers Want*, John Wiley & Sons, 2015.

Figure 6: Inspiration Phase



departments participated in developing ideas from the perspective of various target customer groups. Note, however, that different groups of employees had different degrees of openness and affinity for such a participatory innovation approach. For example, employees with very structured traditional tasks had to be motivated more strongly and accompanied more intensively in the Inspiration phase.

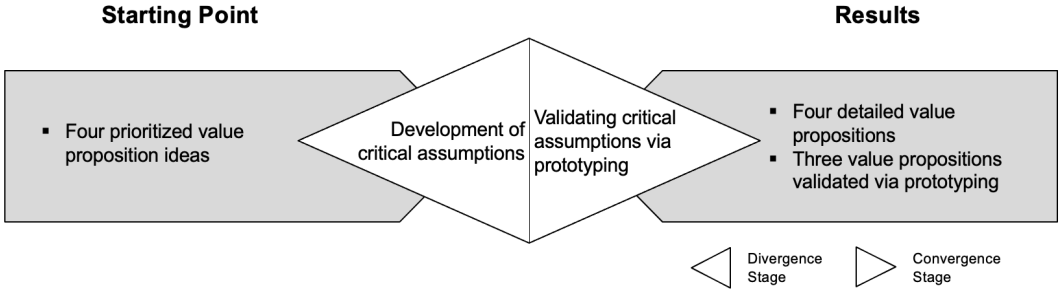
Integrating Internal and External Sources of Inspiration: WashTec's ambition was to make the most of internal inspiration and external sources of ideas to fuel innovation.[19] WashTec hosted an interdisciplinary case-study seminar at three universities to capture valuable external input during the Inspiration phase. As part of a one-week case study and innovation methods training, 25 students from various academic fields were selected to form small teams to develop value proposition ideas that could play to the strengths of WashTec's value pools. These digitally native participants, who are also potential next-generation consumers, brought external insights into idea generation, such as integrating gamification elements into the washing process to increase the excitement factor. In total, the internal workshops and external seminars yielded 110 initial ideas. Once duplicates and unprioritized value pools were excluded, 44 value proposition ideas were taken forward to the Evaluation phase.

19 Research has shown that a combination of internal and external sources of inspiration has a positive impact on innovation performance. See, for example, Caloghirou, Y., Kastelli, I. and Tsakanikas, A. "Internal Capabilities and External Knowledge Sources: Complements or Substitutes for Innovative Performance?" *Technovation* (24:1), January 2004, pp. 29-39.

Phase 3: Evaluation

In the Evaluation phase (Figure 7), WashTec introduced three key initiatives. First, senior management identified the four most promising ideas with the greatest merits in each of the *desirability*, *technical feasibility* and *viability*

Figure 7: Evaluation Phase



dimensions. Second, the company used agile and interdisciplinary approaches to develop these four as-yet abstract ideas into detailed value propositions. Third, WashTec extended the lean startup concepts[20] with a rapid prototyping approach to test assumptions regarding customer acceptance and technical implementation.

Driving Exploration through Interdisciplinary Collaboration: Having involved more than 50 employees in the Inspiration phase, WashTec selected relevant stakeholders and domain experts to develop the four prioritized ideas into detailed value propositions. Four product owners were appointed to lead multidisciplinary teams and collaborate with specialist and domain experts who provided data and knowledge specific to the *technical feasibility* (e.g., R&D), *viability* (e.g., controlling) and *desirability* (e.g., sales and customers) dimensions. Interdisciplinary collaboration and co-creation played a pivotal role in developing the detailed value propositions.

Prototyping for Testing Assumptions: To reduce investment risk, WashTec used pragmatic prototypes (e.g., click dummies) to challenge assumptions developed as the three prioritized value propositions were conceptualized. For example, one assumption tested was that the available customer data about chemical consumption is sufficient to predict the reorder date. To do this, WashTec developed a data analytics prototype to test the *technical feasibility* of the Automated Chemical Supply digital business model. This prototype predicted the customer reorder date based on historic orders and served as a minimum viable product (MVP) for testing with potential target customers. Another example of prototyping was an MVP to verify the customer value of the In-Car Washing Services digital business model. Multiple test drivers received suggestions for nearby car wash systems, information on wash programs and prices, and the option to plan a route to the selected facility. Based on these MVPs, WashTec was able to assess customer acceptance and technical feasibility of the value propositions and improve them.

20 For more information on the lean startup concept, see Eisenmann, T. R., Ries, E. and Dillard, S. *Hypothesis-Driven Entrepreneurship: The Lean Startup*, Harvard Business School Background Note 812-095, December 2011. (Revised July 2013.)

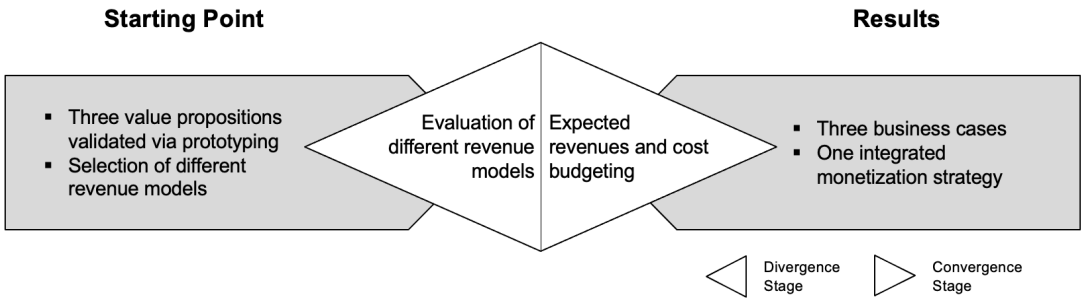
Phase 4: Monetization

In the fourth and final Monetization phase (Figure 8), WashTec developed a monetization strategy for the three validated value propositions. The Monetization phase involved testing different revenue models, such as pay-per-use or subscription. This phase resulted in valid business scenarios for each value proposition together with comparable metrics such as net present value (NPV). With this solid foundation, WashTec's senior management could make informed investment decisions and plan for the required scaling and marketing of the digital business models.

Assessing Each Value Proposition through Value Lever Analysis. In the Monetization phase, WashTec conducted a value lever analysis[21] for

21 For more details on value lever analysis for Internet of Things solutions, see Baltuttis, D., Häckel, B., Jonas, C. M., Oberländer, A. M., Röglinger, M. and Seyfried, J. "Conceptualizing and Assessing the Value of Internet of Things Solutions," *Journal of Business Research* (140:5), December 2021, pp. 245-263.

Figure 8: Monetization Phase



each value proposition to determine the value for each stakeholder group along the value chain, including the operator, the consumer and WashTec as the provider. This analysis quantified the "frontstage" value—i.e., the benefit directly received by either the operator of the machine as a business customer or the consumer. This value is a good indicator of an appropriate pricing strategy because it quantifies the added value. The analysis also quantified the "backstage" value of each value proposition—i.e., the value generated indirectly by the service provider, such as internal efficiency gains, data-based insights or strategic advantages. For instance, the attractive frontstage value of Automated Chemical Supply is the increased convenience of automated supply. But this business model also offers significant backstage value for WashTec by reducing sales force effort, increasing efficiency gains by reducing the need for short-term express deliveries of chemicals, and providing detailed information on the customer's chemical usage.

Evaluating Financial Viability and Feasibility of Revenue Models: Based on the quantified value for each stakeholder group, WashTec evaluated the financial viability and operational feasibility of different revenue models. Given that value generation and the cost structure for digital products are different from the sales of tangible assets, WashTec saw the opportunity to generate continuous revenue streams via usage-based or subscription-based revenue models. It selected appropriate revenue models and developed a monetization strategy based on the analysis of the three prioritized value propositions to create an integrated picture of all cash inflows and outflows anticipated to occur over the next five years. The resulting standardized key figures helped WashTec evaluate the digital business model cases in the context of its established business.

Outcomes of WashTec's Digital Business Model Exploration Approach

Figure 9 provides a detailed overview of WashTec's objectives and activities as well as the results achieved in its exploration of the digital business models.

Recommendations for Exploring Digital Business Models

WashTec's four-phase approach to exploring digital business models forms the basis of our recommendations for incumbents in traditional nondigital industries that now recognize that digitalization must be in their future. These five key recommendations will enable incumbents to determine what exploration should focus on and who should be involved inside and beyond the organization and to undertake exploration efforts that will be sustainable and successful in the long term.

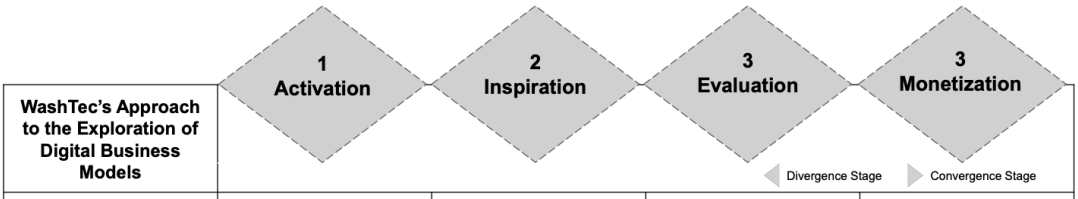
1. Set Boundaries to Avoid Aimless Exploration

Senior management must define strategic objectives for exploring digital business models and set strategic boundaries for prioritization throughout the four phases. They must first specify the areas where exploration can take place and which are excluded. Large companies with a diverse portfolio should focus on a particular segment or industry, such as car washing in the case of WashTec, and define the acceptable distance of digital business models from the core business.

To prioritize value propositions, WashTec's management recognized and harnessed the value of divergence and convergence stages in each phase. Divergence provided space for creativity and conceptualization, while convergence ensured that ideas were translated into concrete value propositions that were prioritized by being evaluated along the *desirability*, *technical feasibility* and *viability* dimensions. For example, in the divergence stage of the Activation phase, senior management should intentionally move outside the business's well-trodden paths and think about "what strategic options emerge with digital technologies." In the related convergence stage, the options discovered by WashTec were evaluated and prioritized according to strategic boundaries—e.g., the necessary relation to the car wash domain. WashTec's CEO summed up the divergence and convergence stages as follows:

> *"We deliberately thought about whether our strategy in the future should focus only*

Figure 9: Detailed Overview of WashTec's Approach to Exploring Digital Business Models



WashTec's Approach to the Exploration of Digital Business Models				
Focus	**Strategy**	**Ideas**	**Value Propositions**	**Business Cases**
Objectives	▪ Concrete digital vison ▪ A digital target picture to guide the company's exploration (Top-down)	• Communication of the vision • Active participation of employees via company-wide workshops (Bottom-up)	• Concrete and detailed value propositions • Development of product ownership • Evidence-based validation of assumptions based on prototypes and customer integration	• Monetization strategy based on prioritized value propositions • Development of valid business cases for each value proposition
Key values and Activities	• Using the strategic compass to structure the digital business model opportunities from an external, customer-oriented perspective • Understanding necessary capabilities and resources	• Attracting and engaging employees for exploration • Anchoring exploration ambition and mindset in the organization • Jointly developing value proposition ideas for realizing value pools	• Reducing risk by means of an iterative validation approach • Spreading and strengthening customer-oriented exploration methods in the company	• Detailing the monetization strategy and revenue models for the value propositions • Calculating expected revenues and expected costs • Enabling shareholder communication by financial indicators
Duration	~ two months	~ three months	~ five months	~ two months
Results	• One digital target picture	• Over 50 employees engaged • 110 raw ideas for exploration	• Four detailed value propositions • Three value propositions validated by prototypes	• Three business cases and an integrated monetization strategy for the prioritized value propositions

on car washing. We discussed many options but then found consensus in the senior management team that this is where we see our future core business. At the same time, it became clear to us that cars and customer interaction will change with digitalization, so we prioritized those options."

2. Use Digital-Savvy Pioneers, but Involve the Whole Organization

Digital-savvy employees are the most important resource for successful exploration of digital business models. The exploration project team should include pioneers with an affinity for digital technologies who think strategically and innovatively and are interested in applying new methods. It is crucial for successful exploration that senior management, led by a pace-setting CEO or general manager, illustrates and reinforces this pioneering spirit and encourages the project team by providing the necessary commitment, resources and incentives.[22] It is also essential to involve people from different organizational levels and functions at defined intermediate stages to achieve commitment and build co-ownership, thus avoiding resistance to digital initiatives.

WashTec selected employees with a strong digital affinity to lead the exploration. Additionally, a broad management circle from

22 WashTec's CEO took a clear leadership role in the digital transformation, but companies can also choose to establish a dedicated chief digital officer role. For information on this role, see Singh, A. and Hess, T. "How Chief Digital Officers Promote the Digital Transformation of their Companies," *MIS Quarterly Executive* (16:1), March 2017, pp. 1-17.

diverse departments was actively involved in the Inspiration phase workshops to contribute ideas for realizing the digital target picture. The Evaluation and Monetization phases included experienced experts from product management, R&D and controls. WashTec's CEO summarized his overarching recommendation as follows:

> *"It takes digital-savvy employees to be able to think [about] and communicate digital [model] exploration. These employees provide open-mindedness in the solution space at the beginning and can later inspire [and] pull along others. Also, it has been extremely valuable to bring our engineers in where they do best—finding excellent technical solutions to clear problems."*

3. Use Strategic Symbols to Anchor Exploration of Digital Business Models

Businesses should harness the power of symbols and visualizations to guide and anchor their exploration efforts.[23] Throughout its exploration journey, WashTec used the digital target picture, which included its "North Star" symbol as the strategic compass and foundation. This picture provided orientation and guidance for the entire organization and became a useful tool and part of the company's shared vocabulary. Because it was shared throughout the company, it helped to anchor the exploration's objectives in the corporate landscape. Symbols foster decentralized alignment, increase visibility and facilitate leadership by keeping the entire company focused on a shared vision.

4. Consider Digital Value Beyond Revenue

When businesses evaluate digital models, we recommend that they consider values beyond direct revenues. WashTec's three digital business models exemplify this. Automated Chemical Supply brings efficiency and cost savings to the core business. The Digital Wash Platform enhances customer business performance and helps shape the car wash market. In-Car Washing Services represents a long-term strategic investment that anticipates market changes, as WashTec's CEO reported:

> *"As vehicles become increasingly connected, our customers' existing over-the-counter business will no longer be viable, as washes might be booked and paid for directly [via] the vehicle. Aware of these developments, we want to offer our customers valuable solutions and contribute to the evolving mobility ecosystem as a strong partner."*

5. Integrate Exploration Objectives into the Business

Businesses need to be diligent and purposeful in sustaining the momentum of their digital initiatives. WashTec's year-long exploration of digital business models identified the need to deeply integrate exploration objectives into the company to prevent digital initiatives from fizzling out. To continually motivate its workforce toward operationalizing these objectives, WashTec implemented "Obeya" rooms,[24] a lean management tool for continuous focus and progress monitoring of digital business models. In these virtual rooms, management receives project status updates and, if required, can support decision-making. By creating dedicated spaces and responsibilities, WashTec firmly anchored the new business models to ensure continuous management awareness.

Concluding Comments

In this article, we have described WashTec's four-phase approach to exploring digital business models, which produced strategic, business and transformational outcomes. During the first Activation phase, senior management created a digital target picture to guide the exploration process. Next, in the Inspiration phase, various members of the workforce collected a diverse set of actionable value proposition ideas. The most promising among these, in terms of alignment

23 A study by McKinsey found that figures and symbols are central to successful innovations. For more information see, Furstenthal, L., Morris, A. and Roth, E. *Fear Factor: Overcoming Human Barriers to Innovation*, McKinsey & Company, June 3, 2022, available at https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/fear-factor-overcoming-human-barriers-to-innovation.

24 The Dutch financial services provider ING uses so-called Obeya rooms to drive its digital transformation. Managers meet there regularly to gain insight into the current status of the transformation and make decisions at eye level. For more details on ING's adoption of the Obeya concept, see *The Olympian Task of Transforming ING*, ING Newsroom, February 16. 2017, available at https://www.ing.com/Newsroom/News/The-Olympian-task-of-transforming-ING.htm.

with the strategic objectives of the company, were then pursued. During Phase 3 (Evaluation), the exploration team translated these promising ideas into detailed value propositions and created testable prototypes. Finally, in the Monetization phase, the team developed viable business cases.

Based on WashTec's approach, we have provided five recommendations for the successful exploration of digital business models. These recommendations will enable the structured exploration of digital business models that are essential for incumbent companies in a progressively competitive and digital landscape.

Our research shows that recognizing and nurturing a company's ambition to explore digital business models and mapping its approach can add significant value. We advise those embarking on this journey to consider their companies' unique needs and adapt the approach accordingly to ensure the success of their exploration journey. The optimum pathway through the journey will depend on an individual company's particular circumstances.

Appendix: Using Action Design Research to Develop WashTec's Exploration Approach

This article describes how WashTec addressed the challenge of structured digital business model exploration. Other incumbents will also find it challenging to explore new digital business models because they will have to move out of comfort zones predicated on established and typically hardware-centric business practices to a new world based largely on data and software, as well as Internet of Things (IoT) sensors. To help WashTec navigate this complex environment, the author team, consisting of five academics and two WashTec executives, collaborated on a 12-month digital model exploration project (November 2020 to November 2021) using the action design research methodology. The assumption underlying this methodology is that complex social processes are best studied by introducing changes into these processes and observing the effects of those changes. All authors were actively involved in the WashTec project. This made it possible to comply with scientific demands for comprehensibility and rigor while at the same time ensuring a high degree of practical applicability.

The data foundation for this article is the author team's analysis of the exploration project, supplemented by documents supplied by WashTec, including strategy documents, quantitative analyses and reports. The project followed the phases of the action design research cycle, as described below:

Diagnosing: Before the start of the project, a preparation workshop was conducted with WashTec's senior management in July 2020. This workshop identified the exploration of digital business models as a central mission for WashTec. However, the diagnosis phase discovered a problem: the development of these new business models could not succeed with existing approaches because these were designed for incremental, product-centric developments.

Action Planning: The structure of WashTec's integrated exploration approach was developed in close collaboration with the academic research authors. WashTec's approach was based on prior approaches described in the innovation literature, which were expanded accordingly. The researchers were actively involved in the development and facilitation of the approach. They gathered requirements from WashTec executives, examined existing approaches and developed the methodological approach together with the practitioners. By acting as methodological facilitators, the researchers were actively involved in the process and observed the realization of the approach and feedback from the company. They structured the phases, introduced the individual methods and supported WashTec in implementing the approach. The researchers also provided access to research and educational institutions—for example, integrating students into the exploration project.

Action Taking: During the year-long project, WashTec went through all four phases of the exploration approach. The data underpinning this article came from:

1. Over 30 workshops, involving representatives from various levels of WashTec's hierarchy, to make joint strategic decisions and internalize the jointly developed approach;

2. Over 100 days of close operational collaboration between WashTec staff and the academic authors; and
3. Weekly reporting and evaluation loops with WashTec's C-level management (a total of 31 sessions).

Evaluating: WashTec's senior management team held at least two review workshops in each phase of the exploration approach to evaluate partial results and to discuss progression to the next phase. At the end of the project in November 2021, the project's results were presented to senior managers and more than 50 employees to evaluate the success of resolving the defined problem.

Specifying Learning: As the project progressed, key learnings and recommendations were collected and documented during the review workshops. After the project was completed, two central reflection workshops were held with C-level management in November 2021 and May 2022 to evaluate the results and the effectiveness of the digital business model exploration approach.

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