Principles of responsible digital implementation: Developing operational business resilience to reduce resistance to digital innovations

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ABSTRACT

Organizations are readily implementing innovative technological solutions, including artificial intelligence (AI) and robotics, to remain competitive. However, these implementations often disrupt the existing routines and practices of stakeholders that are critical for organizational performance and success. If stakeholders are not part of the implementation decision process, the technological disruption may induce stakeholder resistance that may potentially lead to organization-wide turbulence. Addressing this scenario, this paper conceptualizes six principles of responsible digital implementations to develop operational resilience facilitated by discursive channels between organizational leadership and stakeholders. We close by outlining an action plan that provides guidance for managers considering implementing digital technologies, as well as suggest some potential fruitful future areas of research.

Introduction

Digital innovations are continuously changing the way organizations interact and engage with their employees, customers, and other stakeholders. Recent exogenous shocks, including the global pandemic and the ensuing cost of living crisis, have induced organizations to develop operational business resilience. This consists in rapidly accelerating investments in digital innovations to enhance manufacturing, logistics, and customer management processes and capabilities. Consider how digital innovations have changed the fashion retail sector. For example, the fashion retailer *Reformation* has implemented artificial intelligence (AI) analytics to streamline their management processes including design decisions. By analyzing customer behavior and product performance, *Reformation* can identify trends and forecast demand leading to adjustments in product offerings that minimize excess inventory by enabling employees and customers to unlock worldwide stock using omnichannel integration across digital displays, smart mirrors, and employee handsets. This allows delightful customer experiences where product-specific information (e.g., styling tips, manufacturing processes, ethical sourcing, sustainability data) is at one's fingertips via digital displays, including the ability to pay for orders. As the *Reformation* example illustrated, digital technologies investments enable

organizations to remain competitive by enhancing customer experiences while improving operational efficiency.

However, implementing digital technologies often disrupts the routines and practices that stakeholders perform regularly. For example, self-service payment machines require that both customers and employees change their routines synonym? as the innovation largely replaces the human involvement in payment with automatic and computer processes. Employees need to shift working practices to aid customers using the machines and provide other valuable tasks (e.g., greetings, upselling, cleaning, customer service) important to upgrading service quality. If not managed responsibly, these changes can result in employees' job alienation and fear of job loss, and in customers feeling frustrated about the change. This has resulted in retailers such as *Boots*, *Walmart*, and *Costco* revising their self-checkout strategies. Moreover, digital technologies have known issues (e.g., data source bias, algorithmic bias or fairness) that can lead to negative outcomes for some stakeholders. As technological-induced disruptions to routines can be met with stakeholder resistance, this article conceptualizes how organizations can responsibly implement digital technologies to develop operational business resilience leading to reduced resistance.

Operational business resilience describes a set of capabilities that allow organizations to adapt to dynamic situations by quickly altering

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organizational structures or operational processes. These capabilities provide the flexibility that permits the organization to survive or thrive in difficult conditions. Consider the example of the Japanese fast-fashion retailer, *Uniqlo*. Faced with intense competition and a challenging global economy, starting in 2017, they invested in a suite of digital technologies (e.g., RFID fitting mirrors, apps, digital signage, self-checkouts) to bolster their operational business resilience. This enabled *Uniqlo* to agilely respond to local fashion trends with an industry-beating turnaround. Responding to the pandemic, the retailer further invested in self-checkout technologies that provided additional resilience not only in the enhanced time and staff efficiencies, but also to limit the physical interaction between consumers and employees thereby increasing perceived safety and service quality. *Uniqlo's* implementation of digital technologies stands as an example for other managers considering the role of these technologies in furthering operational business resilience. These examples of successful implementations leading to increased resilience may seem obvious in retrospect, however, they are built on four resilience capabilities: anticipate, learn, respond, and monitor. We apply these resilience capabilities to conceptualize how organizations can more responsibility implement digital technologies.

This paper offers two conceptual contributions. First, by adopting a process perspective, we integrate disparate literature findings to conceptualize how organizations can responsibly implement digital technologies with little stakeholder resistance. We provide fresh insights into the literature and introduce a conceptual framework that emphasizes the dynamic and adaptive nature of digital innovation. This framework underscores the importance of resilience capabilities (anticipate, learn, respond, monitor) throughout the technology implementation process. Second, we delineate six principles for the successful and responsible implementation of digital technologies ensuring inclusiveness to limit stakeholder resistance. These principles could co-exist as well as they could exist in isolation, depending on the uniqueness of each organization. Based these principles, we offer an action plan for organizations that details how to incorporate these principles into operations to limit stakeholder resistance.

In what follows, we conceptualize six success principles of responsible digital technology implementations, after first reviewing the resilience capabilities literature. Then, we outline an action plan for managers concerning planning to responsibly implement new digital technologies. This allows for minimizing stakeholder resistance and enhancing organizational resilience. We close with some important areas of future research into how these digital responsibility principles can be applied in practice.

Operational business resilience in a digital world

Organizations operate in an increasingly digital world that is continuously in flux, thus they require the ability to quickly adapt to these dynamic circumstances by developing what we term operational business resilience. Building on work on resilience theory, operational business resilience is the ability to adapt structures and processes to continue the organization's progress prior to, during, or following volatile, uncertain, complex, or ambiguous conditions. Organizational progress can be defined differently depending on the circumstances. This progress could be bouncing back from an event, bouncing along to maintain a position during challenges, or bouncing forward despite challenges. Thus, business operational resilience provides the underlying strength the organization requires to maintain sustained levels of organizational performance under various conditions.

While operational business resilience sometimes requires changes to be made (e.g., adapted products, evolved workplace practices, streamlined processes), operational business resilience is distinct from change management. Change management focusses on implementing changes smoothly and successfully. This is a crucial and complementary aspect of successful business operational resilience. However, change management does not consider the ability of an organization to make progress, as successfully implemented changes can still lead to organizational stagnation or regression. Instead, business operational resilience takes a holistic perspective that encompasses how organizations withstand, with or without changes, significant disruptions.

When some kind of organizational change is needed, that change must be built on the foundations of the organization's operational business resilience. At an individual level, this resilience impacts how individuals respond to and overcome adversity, stress, and change that can have a profound impact on the overall organizational response to digital innovation. At an organizational level, both passive and active resilience is required. On one hand, passive resilience is dependent on developing established channels of response so that the organization is enabled to withstand the impacts of disruption. For example, *Zara's* well-established supply chain networks spanning various countries and regions, including multiple suppliers, manufacturers and distribution centers, enable *Zara* to quickly adapt to disruptions in one part of the supply chain by sourcing from alternative locations. On the other hand, active resilience is dependent on developing effective situational awareness, so that the organization is enabled to recognize contextual demands. *Zara* also actively monitors sales data, customer feedback, inventory levels and market trends utilizing advanced data analytics to gain effective situational awareness of market demands and supply chain dynamics. This allows the retailer to quickly adjust production, distribution, and marketing strategies in response to changing consumer behavior and market conditions. Thus, the individual and organizational foundations of operational business resilience intertwine to form capabilities that aid the management of dynamic situations.

Operational business resilience consists of four interdependent capabilities that facilitate organizational performance: anticipate, learn, respond, and monitor. *Anticipating* capabilities address and prepare for potential future developments and shocks that may impact current operations. For example, *Amazon* is constantly scouting across industries and markets for new digital technologies to anticipate market trends concerning operations and customer experience. *Learning* capabilities
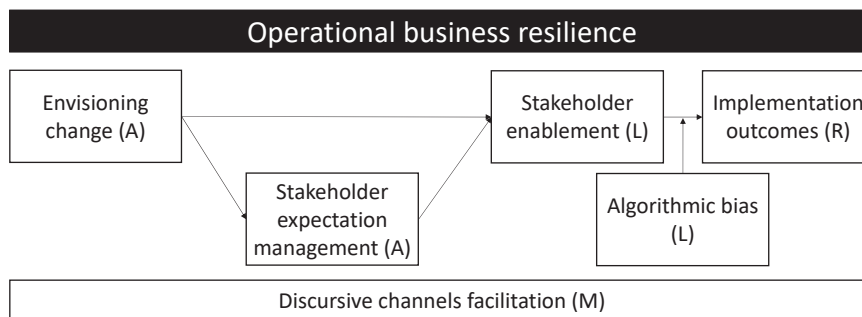

Fig. 1. Responsible digital implementation process. Note: The mapping of the resilience capabilities shown by A for Anticipate, L for Learn, R for Respond, and M for Monitor.

enable factual discovery from past successes or failures, the sharing of organizational sensemaking of experiences, and knowledge transfers between stakeholders. *Starbucks* has set up an internal communication app to connect their staff and share experiences, success stories and best practices on technologies and learn about new operations. *Responding* capabilities relate to being able to quickly pivot by applying tactical knowledge under conditions of uncertainty and activating prepared actions. *Nike's* agile supply chain and production processes enable the brand to respond quickly to changing market conditions and consumer demands, allowing for rapid product development and replenishment cycles. *Monitoring* capabilities involve scanning both the internal and external organizational environment using critical indicators to observe actual or potential impacts on organizational performance. *Walmart* employs digital technology to monitor performance metrics and assess potential risks across its operations. These resilience capabilities are equally important and interconnected and often rely on feedback and feedforward implementations to streamline the process of responsibly implementing digital technologies.

Principles of responsible digital implementation

Based on corporate digital responsibility foundations, we map the resilience capabilities of anticipating, learning, responding, and monitoring to the technology implementation process (see Fig. 1) to highlight six responsible digital implementation principles. The technology implementation process begins with envisioning change that can set expectations for the impacted stakeholders. These processes require continued anticipation for both the near and far future, which subsequently need to be managed. These technology implementation plans and expectations affect the knowledge transfer or developed among stakeholders, enabling them to resiliently and responsibly use or apply the technology. To facilitate this, learning from experiences and responding to regular and irregular changes, disturbances, and opportunities by activating prepared actions or adjusting the current mode of functioning are highlighted as the underlying resilience capabilities. Additionally, technology implementation outcomes can be negatively impacted by forms of algorithmic bias inherent in the system, unless mangers and stakeholders learn to identify and mitigate the bias to unlearn preconceived notions. Furthermore, the facilitation of discursive channels, a process often involving both passive and active resilience elements, aligns with the monitoring resilience capability. We discuss these factors and their dynamics in the following sections.

Envisioning change

Responsible digital implementation requires that managers work with stakeholders to collaboratively envision how digital technology can be integrated to facilitate resilient routines or practices (e.g., customers' pattern of shopping for groceries, employees' method of restocking shelves). This requires continued anticipation efforts (i.e., both long and short term) as stakeholder practices are in a state of constant flux and evolve due to both changes in stakeholders' needs and preferences, as well as exogenous disruptions—such as the implementation of digital innovations. Hence, the status of change readiness of organizations varies depending on where they are at in their digital transformation journey. Digital technology adoptions may promise organizations operational efficiency where they improve or augment employees' ability to solve problems or complete tasks, promise to enhance customer experiences, or provide additional transparency to meet sustainability objectives. Beyond merely adopting a technology, sustained changes in practices to embed this innovation require that managers and impacted stakeholders continuously collaboratively envision the implementation plan to be both responsible and successful. Lack of collaboration among all the parties involved in the change may result in disillusionment, resistance and alienation of some or several stakeholders which, in turn, could lead to failure of practice change.

Responsible digital implementation requires planning for how changes will be incorporated into existing routines and subsequently applied by individual stakeholders. Thus, partaking in how the new technologies will enhance employees' jobs and their relationships with the customer, to get their full buy-in. For instance, *Marks & Spencer*, a British retailer, frequently experiments with emerging technologies in their retail stores by ensuring all impacted stakeholders are part of the process. This involves employees working across all levels cooperating on resilient implementation strategies that attempt to anticipate both positive and negative outcomes of digital technologies. Some of these outcomes identify latent needs or attitudes, novel demands or constraints, new opportunities, risks or concerns or changing operating conditions that represent important considerations to enable progress in organizational practices. This collaboration results in co-envisioned digital technology implementations that responsibly deliver organizational performance, sensitive to impacted employees. This example points to an essential component of responsible digital implementations:

P1: When considering implementing digital technologies, responsible managers anticipate key stakeholders' needs by involving them when envisioning changes in their routines.

Stakeholder expectations management

Digital innovation not only boosts desirable organizational objectives that may have been collaboratively envisioned, but also can redefine the nature of stakeholders' relationships with the organization. Relationships between organizations and their stakeholders are becoming more immediate and personalized, which is leading to more dynamic shifts in interaction patterns and expectations. The enhanced variability in potential responses necessitates investment in the ability to anticipate these dynamics and identify potential breakdown situations. For example, in the retail sector, the introduction of augmented reality (AR) fitting rooms (e.g., magic mirrors) can alter the shopping experience. Previously, customers would manually try on multiple outfits, often requiring assistance from store employees for size checks or alternate colors. With AR fitting rooms, customers can virtually 'try on' different outfits without physically changing. This innovation necessitates a shift in employees' roles towards assisting with technology, providing personalized shopping advice based on virtual fittings, and potentially leveraging customer data for future insights. Similarly, in the customer service sector, AI-enabled chatbots are revolutionizing the interaction of consumers with organizations. These chatbots allow consumers to resolve simple inquires swiftly, freeing up human customer service agents to focus on more complex issues that require human input.

While the advantages of these digital innovations are evident and aligned with collaborative vision, managing stakeholders' expectations regarding the transformative impacts of digital technology on their practices is crucial to mitigating resistance. This resistance primarily stems from the gap between stakeholders' expectations and the real-world capabilities of these technologies, causing misunderstandings about the role of technology in the workforce and marketplace. For instance, employees might fear job redundancy as these new robots take over their tasks. However, they often fail to recognize that while robotics may replace their manual tasks, their expertise and oversight remain invaluable. The efficient operation of these systems necessitates human supervision and intervention, underscoring the continued indispensability of their roles.

Therefore, organizations seeking to responsibly implement digital technologies must anticipate this employee response and engage in clear, ongoing communication to clarify how practices and routines will change, be disrupted, or evolve. This will help demonstrate the importance and benefits of the change, while also (re)affirming the indispensable value of stakeholders in this new landscape and emphasize their important role during this stage of progression. By doing so, organizations can cultivate buy-in, reduce resistance, and ensure resilient

operation. Formally, we propose:

P2: Responsible organizations anticipate expectations of the place of the innovative technology in stakeholders' routines.

Stakeholder enablement

After the disruptive impact of digital technology has been planned for and expectations have been managed, the organization needs to strategically enable stakeholders, so they can learn to enact the envisioned use of the digital technology in their modified routine or practice. Strategic enablement is the process of transferring or developing the knowledge necessary to successfully use or apply the technology effectively. Knowledge transfers can be facilitated by either personnel in a training program, a training manual, or technology in the form of an app or a game that facilitate learning, the right lessons, from experience. Knowledge can be self-developed using exploration and experience using new technologies.

To achieve a state of enablement, stakeholders must acquire or develop knowledge of that technology, which includes know-what, know-how, and know-why knowledge. Know-what knowledge refers to the tangible aspects of the technology (e.g., the buttons to press, levers to pull). Know-how knowledge includes the procedures and methods to use digital technology competently. Know-why knowledge is the rationale or the meaning behind the use of this technology. For example, many retailers have implemented AI-enabled self-service checkouts to streamline payment operations and facilitate improvements in customer services and promote other strategic efficiency objectives (e.g., loss prevention). The organization needs to set up a training program that educates frontline employees not only on how to technically use and maintain these machines to gain the competencies needed to aid consumers' usage of the digital technology. Moreover, both frontline employees and consumers need to develop an understanding that these self-checkouts are intended to improve efficiency and speed up payments in order for the sustained usage of digital technology to become part of retail practices.

Furthermore, contextual knowledge (i.e., know-who, know-where, know-when) may be essential to responsibly implementing the technology that is sensitive to local conditions and factors that may not be organization-wide. Taking the same example as above, contextual knowledge may be important here in local stores that have less tech-savvy consumers, or more junior staff that is relatively unskilled would need adjustments to how training and other knowledge transfer programs are enacted to ensure resilient business operation.

By elucidating anticipated outcomes, benefits, and potential challenges of the implementation, organizations can avert misunderstandings and install a clear sense of purpose. This transparent knowledge is crucial for stakeholders to not only know what to do with the digital technology, but also grasp the reasoning behind the changes in their routines. This understanding, in turn, facilitates buy-in and diminishes apprehensions, and can enhance the co-creation process. For example, by understanding the potential biases that can raise from a homogenous team, software companies often incorporate team members from diverse ethnic backgrounds, which leads to more nuanced interactions with, and benefits from, digital innovation by different groups. The diversity of perspective gained through co-creation ensures that strategic enablement is more inclusive. Additionally, to spearhead these shifts and guarantee their effective implementation, organizations should lean on change advocates or practice champions. Armed with a thorough comprehension of the impending changes, these individuals act as torchbearers, guiding stakeholders during the transition.

Organizations seeking to responsibly implement digital technologies need to aid stakeholders in gaining or developing the knowledge that permits them to become enabled to use these technologies in their changed practice. Formally, we propose:

P3: Responsible organizations facilitate stakeholders' learning by developing strategic enablement programs.

Algorithmic bias

While implementing digital technologies could be responsibly envisioned with active engagement from the affected stakeholder community, these technologies likely have biases inherited in their design based on the way algorithms learn. As a result, their way of learning can influence the implementation outcomes based on stakeholder's responses, which could eventually influence the social responsibility and resilience of the organization.

First, algorithms are designed and written by a software programming community that is lacking diversity. For instance, Western software engineers are predominantly male, often educated in Western cultures, and generally earn higher salaries compared to the general population. While these engineers may not be consciously biased, their backgrounds and life experiences could manifest unconscious biases as they design and develop algorithms that directly impact organizations' digital implementation. For example, one major fashion and cosmetics brand discovered that their face recognition and augmented reality technologies generally work more effectively with younger white and Asian faces. With users of darker skin tones and older users, the technology failed to locate and place their virtual products on their faces, and lipsticks were also misplaced on those users' faces. These kinds of shortcomings have unveiled the knowledge gap that was created unintentionally by stakeholders, and organizations may endure the consequences when implementing digital technologies that hamper progress.

Second, digital technologies' algorithms may be trained with datasets that entail existing biases that would directly influence their outputs. Due to time and resource constraints, especially for smaller-sized organizations, third-party data provider is a popular option to purchase ready-to-use data sets. However, the data is often unvetted and the way the data is collected may inherit biases that affect the accuracy of the outcome. With this issue being the foundational bias, algorithms would make decisions considering the explicit training data (i.e. real-world data), which in itself is subject to societal biases. Consequentially, the way employees within an organization, who are often untrained in mitigating algorithmic biases, choose to present a brand or a product would indirectly echo these societal biases. For example, most fashion brands would present their products mostly with tall, white models, which they believe is the societal beauty standard over decades. As a result, when Google was asked what an average fashion customer would look like, only one in 25 is plus-size or dark skin. This misrepresentation of the reality is caused by the algorithms being unable to identify the societal bias as they were trained with this limitation. This is an indication of the kinds of societal biases that algorithms need to unlearn to represent the population fairly. An example of the potential consequence that these societal biases would cause when organizations are implementing digital technologies with these inherited biases is that potential customers who fall outside of the average fashion customer, such as a petite or black person, may not be receiving any automated fashion recommendations that are relevant to them. This shows the algorithm's ability to optimize its outputs based on external societal biases and alerts organization leaders to give further attention to the algorithms' outputs to maximize digital technologies' value through management practices.

Third, digital technologies' algorithms incorporate real-time data processing and could potentially detect and reflect biased individual behaviors to mitigate the feedback loop issue. A feedback loop refers to a self-reinforcing and learning cycle where biased data were used as a source repetitively over time and exacerbated biased outcomes. With the real-time nature of algorithms, organizations can monitor, include, and exclude different sources of data to train their algorithms as a learning source. For instance, companies such as Pinterest are trying approaches including allowing their users to customize their beauty searches by skin tone range which would diversify the algorithm's knowledge base as it learns about specific skin tones in fashion in a real-time matter. However, this approach may not be sufficient as it ignores implicit

correlations, which are influenced by the algorithms' optimization skills. Furthermore, consumers may be unaware that they are making decisions based on a biased data output, which can perpetuate the negative outcomes of algorithmic bias through the feedback loop. Therefore, although real-time data processing may propose benefits in technology implementation, organization leaders would have to identify the outliers that the algorithms usually ignore in a timely manner to avoid further live reinforcements of biased data that may create further consequences for stakeholders. As a result, this indicates that stakeholders would not only need to monitor the input of the algorithm's learning sources and expand its knowledge bank, but also need to learn and educate their stakeholders on ways to identify and mitigate algorithmic bias, and eventually develop strategies to aid the unlearning process of the algorithm's inherited (implicit, explicit, or societal) biases.

Respectively, these kinds of biases in algorithms provide privileges for one category over another and generate algorithmic bias feedback loops in the process of technological implementation. Thus, creating strong driving forces that would impact managerial practices far beyond the fashion industry, and would affect public policy, software architecture, regulation, incentive design, and more. Moreover, it flags the importance for managers to educate stakeholders for a more collective effort in tackling this issue. As a result, we propose:

P4: Responsible managers learn and educate stakeholders on ways to identify and mitigate risks of algorithmic bias to unlearn preconceived notions by identifying sources of algorithmic bias inherent in digital technologies.

Implementation outcomes

Technology implementation is a complex process, unique to each organization. For responsible organizations, the journey does not end with the initial implementation. They need to recognize the ongoing need for adjustments and fine-tune their response to ensure alignment with the distinct requirements of various involved stakeholders and store environments and sustained change that resonates with the local realities of each setting.

A proactive approach, based on activating prepared actions or by adjusting current modes of functioning, is crucial for responsible organizations to ensure stakeholders remain engaged with new technologies. Technical malfunctions or a perceived lack of relevance can deter stakeholders and halt resilient progress. For instance, if an in-store technology malfunctions, employees might abandon its use, leading to potential innovation failure. Successful organizations need to distinguish themselves by actively listening to involved stakeholders during the technology implementation phase and by understanding stakeholders' unique characteristics. Stakeholders who are tech-savvy, have prior experience, or have grown up with technology typically exhibit a higher level of acceptance. For example, US premium retailer Michael Kors highlights how their younger sales staff readily embrace and utilize new in-store technologies, both for consumer interactions and store operations. In contrast, older, less tech-savvy sales staff might experience apprehension or anxiety towards new digital technologies, potentially leading to resistance against such innovations.

Additionally, the scope of digital technology implementation can differ based on the specific technology and its application. A significant factor is technology localization. For instance, in the retail sector, the integration of technology might differ based on the store type or its geographical location. Adidas, a sportswear retailer, provides an illustrative example. They have adopted a pyramid segmentation for their stores, heavily investing in the top-tier stores located in key areas. Their strategy is informed by a belief that the ripple effect from a flagship store holds more value than widespread minor changes across all stores.

Responding and re-adapting the envisioned changes for the integration of new digital technology into existing practices is fundamental to achieving and maintaining stakeholders' task satisfaction and job performance. Therefore, we propose:

P5: Responsible organizations quickly respond to implementation outcomes to optimize the sustained evolution of the innovative technology.

Discursive channels management

Organizations implement digital technology (e.g., smart mirrors, augmented reality smartphone apps, self-service checkouts, smart inventory systems) for various strategic goals. These may range from enhancing experiences to optimizing internal operations to maintain competitiveness in highly volatile markets that necessitate knowledge of what to look for and monitor that which is or could seriously affect operational business resilience performance in the near term.

An important aspect that emerged across these stages is having effective internal communication channels to promote technological change. Here, it is very important to have people who speak the 'language' of the audience to be credible and effective in their communication, for change embracement to take place effectively. To this goal, incentives on overall performance evaluation and rewards may be put in place to achieve employees' commitment. This may involve sales placed across channels (e.g., via online channels through in-store technology), which requires operating on an omni-channel basis. Moreover, often in order for training to be fully efficient, organizations may consider delivering them before, during and after technology implementation and monitoring the performance progress throughout all stages. This requires budget, personnel to deliver the training, and assessment of staff— hence requiring involvement from HR Departments.

Existing practices are constantly disrupted by the implementation of AI technologies. Recent scholarly findings illustrate those organizational stakeholders, both internal and external, are more willing to accept AI if discursive channels are set up and maintained between stakeholders. This may involve ways to collaboratively create AI changes, as a way of simplifying their workflow, reducing menial tasks, or enhancing job satisfaction.

Creating and maintaining discursive channels, consisting of multilateral communication channels across the stakeholders involved to work collaboratively towards an organizational goal, is therefore necessary to and requires the involvement of all interested stakeholders within the organization to adopt the change. For instance, in the case of the Los Angeles-based fashion brand Reformation, employees' excitement about eh introduction of new technologies in store, through a lot of training and involvement of the personnel, leads to proactive promotion of the brand's innovative initiatives.

Discursive channels foster collaboration between internal and external stakeholders of the organization. These channels are essential for establishing and maintaining continuous feedback loops among all involved parties. Across the stages of digital innovation implementation, discursive channels facilitate the alignment of change planning, skill enhancement, and the collective development and execution of digital technology implementation. Discursive channels also play a crucial role in assessing the outcomes of these implementation and ensuring consistent updates and progress. Moreover, technology implementation demands regular updates in content (e.g., new product visuals and information, across all touchpoints between the retailer and the consumer) and in maintaining the technology to ensure its proper functionality and alignment with current market trends and technological advancements. This is crucial, as relying on outdated technology or facing malfunctions can adversely affect the brands' image and overall operational business resilience.

Overall, responsible digital technology implementation requires a proactive approach to communication, ensuring that feedback it not just received but actively sought. By fostering open channels of discussion, managers can tap into real-time insights, address concerns promptly, and make iterative improvements. This not only enhances the implementation process, but also builds trust and collaboration among

stakeholders. Recognizing the pivotal role of continuous monitoring and open communication in successful digital technology implementation, we propose:

P6: Responsible managers continuously monitor the digital technology implementations process by opening discussive channels that encourage feedback loops.

Action plan for managers

As organizations rapidly embrace technology to secure competitive edge, the careful management of disruptions to stakeholder routines and practices becomes essential to avoid stakeholder resistance. This section details a managerial action plan for responsible digital technology implementation anchored in the six principles. This plan serves as a guide that emphasizes the significance of operational business resilience by focusing on the four capabilities: anticipate, learn, respond, and monitor. Each type of capabilities plays a distinct but interconnected role, ensuring that digital technologies are implemented not only in a way that minimizes disruptions to organizations and stakeholders, but also in a socially responsible manner.

In the digital technological implementation process, anticipating capabilities set the foundation, echoing Principle 1 and Principe 2. Organizations must immerse themselves in comprehensive stakeholder mapping, refining their digital strategies through deep dives into stakeholder dynamics. As a preliminary step, managers need to understand their existing resources and expertise. This involves establishing readiness of resource based, assessing internal and external resources, and consulting with mid-level managers or store representatives about employee skills. With a clear understanding of their stakeholders, organizations can better predict diverse reactions and potential impacts. By recognizing potential stakeholders and assessing their roles in the transformation, organizations can forecast varying reactions and outcomes. Failure to do so may result in alienated employees who refuse to change their routines by implementing technology, thus leaving the new tools abandoned or trying to sabotage them. This was the case of an Italian high-end fashion brand that did not responsibly co-create technological change with the vested employees, ignoring their needs and skills, thus resulting in missed resilience. Parallel to this, scenario planning plays a crucial role. By developing different scenarios of how digital innovation might evolve and engaging with cross-functional teams, organizations can explore the diverse outcomes each scenario might entail. To stay ahead of the curve, organization should remain attuned to emerging digital trends in their industry. By closely observing and analyzing technological advancements and the evolving industry standards, they can better anticipate and adjust their future stakeholder mapping, ensuring adaptability as digital trends shift and evolve. Pertaining to the latter, cross-boundary scoping efforts (e.g., beyond organizational silos) and "thinking outside of the box" are required to ensure subtle indicators are noticed.

While anticipating capabilities focus on envisioning the future, learning capabilities use past experiences and current feedback to refine an organization's approach to digital innovation, aiming to showcase the tangible benefits and utility of the innovation to stakeholders. Principle 3 highlights that at the heart of this phase lies consistent engagement. This entails both the effective dissemination of information and an active pursuit of feedback, all approached with an open mindset. By hosting training sessions and workshops, organizations facilitate a deeper understanding and alignment with digital innovation among stakeholders. Principle 4 adds depth to learning capabilities. Since most organizations are already good at working with established routines, it is beneficial to offer training that not only challenges the underlying assumptions but also rethinks established practices. It encourages stakeholders to be critical, questioning outcomes, and challenging preconceived notion by pinpointing potential algorithmic biases intrinsic to digital innovation. This training emphasizes adaptability and achieving "doing more with less", ensuring stakeholders are equipped to

match the changing requirements of different possible scenarios. Such training sessions can be executed using trusted and respected internal stakeholders such as peers or group leaders, or external experts like consultants and projects managers. The delivery can range from human-led sessions to technology-driven modules, or a combination of both. These points represent key implications for HR departments and internal communications departments of retail organizations, who have to set systems in place for measuring and rewarding employees, as well as setting up teams to deliver trainings and follow ups. Simultaneously, alongside with providing training, organizations should proactively engage in interviews, system measurements, and collect both positive and negative feedback. It enables organizations to continuously deepen their understanding of stakeholder needs, concerns, and expectations. This enhances overall connectivity and strengthens bonds between various organizational levels and external partners. Moreover, beyond soliciting feedback from their direct stakeholders, organizations can gain invaluable insights by observing competitors and analyzing their digital strategies. This not only allows them to benchmark their initiatives, but also empowers them to refine their engagement strategies with stakeholders, ensuring a more tailored and effective learning approach in the ever-changing digital landscape.

Following anticipating and learning capabilities, responding capabilities set the groundwork. They actualize the refined vision into concrete actions such as revisiting the organizational structure, fostering cross-team collaboration, and system compatibility. Mangers should assess mechanisms promoting diversity and redundancy, as these are key for an organization's readiness to respond and maintain operational resilience. This may lead to revisiting hiring or increasing workforce empowerment, such as well-being initiative and time-management resources. Furthermore, in the organizational journey toward digital transformation, the response capabilities demand collaboration, which builds trust and integrates digital innovative solutions into existing practices, and potentially boosts the potential of them to become the reconfigured embedded pathways of response. In this respect, identifying or assigning change advocates can aid forward-thinking in the implementation process. Given the evolving nature of digital landscapes, it is not enough to just have a training infrastructure, updated training are crucial for navigating digital innovation. Only through such sustained attention can organizations ensure that stakeholders are fully equipped to navigate and capitalize on the ever-shifting terrains of digital innovation. Equally vital is the organization's agility in tailoring digital offerings to cater to diverse needs, underscoring the importance of localization and customization. With the rapid pace of technological advancements, proactive maintenance and regular updates are crucial, ensuring that the digital tools remain relevant and efficient in a continuously shifting market. The response phase poses challenges related to system integration and compatibility, especially considering the range of current and emerging technologies retailers might incorporate. Given the diverse nature of these technologies, whether they're employee-focused or customer-centric, and the distinct operational contexts (for instance, company-owned versus franchise-owned stores), organizations are bound to encounter unique challenges. In line with Principle 5, organizations must be ready to adapt their digital strategies promptly based on feedback and emerging complexities, ensuring a cycle of review and proactive preparation for integration and functionality.

In the journey of digital innovation, monitoring capabilities are pivotal from the initial stages to the final implementation. To gain insights on the internal and external context, organizations should leverage real-time digital dashboards so that they can capture immediate insights and enable quick digital strategy adjustments. Such dashboards, enriched by consistent stakeholder feedback, ensure that the organization remains agile and is ready to the ever-evolving digital landscape. The key to these monitoring capabilities, based on Principle 6, is maintaining the dashboard as an open communication channel, serving to keep everyone informed and on the same page. While post-

Table 1

Considerations for responsibly implementing digital technologies.

Responsible digital implementation principle	Suggested guidance for managers		Potential questions for researchers
[P1] When considering implementing digital technologies, responsible managers *anticipate key stakeholders' needs* by involving them when envisioning changes in their routines.	*Do*	▪ Start early with active stakeholder engagement, to grasp their needs and expectations, using diverse methods for broad input (e.g., workshops, observations). ▪ Maintain clear, transparent communication about how their feedback actively shapes technology decisions.	▪ How to identify the potentially impacted stakeholders by this digital technology implementation? ▪ To what extent does stakeholders' involvement depend on the type or scope of digital technology? Do these differences affect how managers should engage with stakeholders? ▪ How should managers take into account conflicting stakeholders' needs, especially those that are vulnerable, in implementing digital technologies? ▪ What data from stakeholders, organizational processes, and the external environment can best inform organizational planning?
	Don't	▪ Assume that managers already know what stakeholders need without direct engagement. ▪ Overlook the potential for conflicting needs among different stakeholder groups.	
[P2] Responsible organizations *anticipate expectations* of the place of the innovative technology in stakeholders' routines.	*Do*	▪ Conduct foresight activities to understand future trends and how they might impact stakeholders' expectations. ▪ Implement ethical and sustainable practices from the outset and ensuring communication to all stakeholders.	▪ What structural elements should organizations enact to aid scanning efforts to better anticipate stakeholders' expectations? ▪ How do ethical or sustainable implementation measures impact stakeholders' expectations? ▪ How can managers better anticipate stakeholders' expectations by understanding the factors that underly them?
	Don't	▪ Underestimate the importance of maintaining flexibility to adopt to changing stakeholders' expectations.	
[P3] Responsible organizations facilitate stakeholders' *learning* by developing strategic enablement programs.	*Do*	▪ Create inclusive training for all digital literacy levels and communicate the innovation's benefits clearly. ▪ Customize programs to meet diverse stakeholder needs and capabilities. ▪ Encourage sharing of best practices and experiences at peer-to-peer level to promote change. ▪ Consider setting aside extra budget and resources for repeated trainings, beyond initial trainings.	▪ What educational tools or training programs are most effective to enable stakeholders to get the most out of the digital technology? ▪ How to design strategic enablement programs that develop capabilities while ensuring the clarity of rationale behind the innovation? How can managers facilitate the responsible transformation from stakeholder resistance to change champions? ▪ How do digital literacy levels or other important stakeholders' characteristics impact the method of strategic enablement? When do levels of investment in strategic enablement need to be tailored to meet diverse stakeholders?
	Don't	▪ Assume one-size-fits-all when it comes to educational tools and programs. ▪ Overlook the importance of ongoing support and learning opportunities beyond initial training sessions.	
[P4] Responsible managers *learn and educate stakeholders* on ways to identify and mitigate risks of algorithmic bias to *unlearn* preconceived notions by identifying sources of algorithmic bias inherent in digital technologies.	*Do*	▪ Provide training to recognize and comprehend algorithmic bias, and establish a clear feedback process for its impacts. ▪ Promote critical thinking and the reconsideration of biases to foster an inclusive technology culture.	▪ How can organizations train managers to ensure stronger capabilities and knowledge in learning and educating stakeholders in identifying sources of algorithmic bias? ▪ What procedures could managers enact to ensure that all potential stakeholders' perspectives and preferences are observed and considered? ▪ To what extent should organizations be responsible for the algorithmic bias impacts of digital technology on stakeholders? What is the line between ethical and practical responsibility? ▪ How can managers be aware of preconceived biases and enact unlearning strategies to systematically address them?
	Don't	▪ Ignore the potential for algorithmic bias to perpetuate or exacerbate inequalities. ▪ Neglect the importance of diverse perspectives in identifying and addressing sources of bias.	
[P5] Responsible organizations *quickly respond* to implementation outcomes to optimize the sustained evolution of the innovative technology.	*Do*	▪ Use clear metrics for impact assessment and create a responsive plan that keeps stakeholders engaged and informed. ▪ Highlight successes and adapt to feedback, maintaining transparency and stakeholder involvement.	▪ Which implementation metrics best assess and evaluate both organizational and stakeholder outcomes of digital technologies? ▪ What strategies need to be put in place to address unanticipated negative stakeholder outcomes and the potential risks involved? ▪ How to communicate and leverage both anticipated and unanticipated positive outcomes for stakeholders? ▪ What outcomes signal that the digital technology may have reached its useful end and it is in need of replacement?
	Don't	▪ Wait to act until negative outcomes become critical problems.	

Table 1 (*continued*)

Responsible digital implementation principle	Suggested guidance for managers	Potential questions for researchers
	■ Overlook the value of stakeholder feedback in identifying areas for improvement.	
[P6] Responsible managers *continuously monitor* the digital technology implementation process by opening discussive channels that encourage feedback loops.	*Do* ■ Encourage ongoing feedback (e.g., via apps, workshops, team meetings) and integrate it for constant technology improvement and proactive issue resolution. ■ Cultivate trust by valuing and acting on stakeholder feedback to guide organizational and technological decisions. *Don't* ■ Treat feedback as a one-time requirement rather than an ongoing process. ■ Dismiss or ignore feedback, especially if it reveals uncomfortable truths or challenges.	■ How to create an organizational culture that listens first then responsibly acts upon the information to correct any issues arising from digital technology implementation? ■ What forums should discursive channels take to encourage open inclusive dialogs and understanding among diverse stakeholders and the organization? How can this avoid being perceived as intrusive or creepy? ■ To what extent do cultural and geographical differences influence the adoption and utilization of discursive channels for monitoring implementation across multinational organizations?

implementation marks a significant achievement, it also signals the onset of ongoing refinement. As such, assessing the effects of implementation requires a multifaceted approach. For example, both financial metrics (e.g., sales, profits, and market share) and non-financial indicators (e.g., competitive position, reputation) should be factored into the evaluation. Furthermore, it's crucial to engage both external and internal consultants to collaboratively participate in the assessment, ensuring a comprehensive and balanced evaluation. Moreover, since the digital environment is constantly evolving, monitoring and anticipating key digital trends is key to stay relevant. Mangers should set up process in place to constantly monitor the digital innovation of key competitors and adjacent industry sectors. This cyclical approach, anchored in persistent monitoring, ensures that digital innovations remain relevant, efficient, and always in tune with the dynamic digital environment.

Conclusions

While we conceptualize six principles of responsible digital implementations to develop operational business resilience between organizational leadership and stakeholders, our work also highlights important questions for both managers and researchers to consider. We suggest important considerations for those considering responsibly implementing digital technologies and those that might research these processes in Table 1.

While technological innovation is fundamental for the success of today's businesses, several implications concerning its implementation derive from it. Organizations willing to successfully implement changes in their routines need to acknowledge how this will impact relevant stakeholders. While this is not an easy process, our paper stresses the importance of involving relevant stakeholders in the implementation stages. We do so by integrating disparate literature findings and by providing real cases from the industry, to conceptualize how organizations can responsibly implement digital innovations while minimizing stakeholder resistance. We provide six principles of responsible digital implementations which allow organizations to develop operational business resilience enabled by discursive channels between organizational leadership and stakeholders.

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Declaration of Competing Interest

None.

Data Availability

No data was used for the research described in the article.