

# A Serious Game on Shaping Employee Behavior for the Digital Transformation: Design Considerations for a Serious Game on using HR to Shape Employee Behavior for the Digital Transformation

Luuk Collou<sup>1</sup> and Guido Bruinsma<sup>2</sup>

<sup>1</sup>Saxion University of Applied Sciences, Enschede, The Netherlands

<sup>2</sup>University of Twente, Enschede, The Netherlands

[l.d.collou@saxion.nl](mailto:l.d.collou@saxion.nl)

**Abstract:** Organizations increasingly embrace the digital transformation (DT): organizational change shaped by the widespread diffusion of technology. This results in specific demands in terms of employee behavior. Organizations need to adapt to technology-driven work methods and proactively set out to reap the benefits of new technology. Shaping employee behavior conjures a significant challenge for organizations. While aligned HR configurations shape employee behavior, the number of interrelated HR practices to select from is vast. Currently, no tool aids professionals with the design of an HR configuration that shapes DT behaviors. DITInLine is a serious game that captures this challenge; it invites professionals to design an HR configuration that shapes the DT behaviors of employees. Departing from the state of the art HRM literature, it presents professionals with a set of granularly defined HR practices that can combinedly be implemented during the game. The game provides feedback on the impact of their decisions. Professionals are challenged to combine those HR practices into a strategy-aligned HR configuration that shapes the employee behaviors most effectively. After each round, feedback on the HR configuration design is provided to the players. By providing an abstract representation of the HR and DT challenges that organizations face, DITInLine constitutes a valuable tool for professionals tasked with designing aligned HR configurations. DITInLine forces managers to be explicit about their HR decisions. It provides a risk-free environment for them to experiment with HR practices and gauge the effects of their decisions, potentially enabling learning. From a research perspective, the HR choices of these professionals are made explicit. It enables studying HR decisions. Furthermore, the serious game introduces a promising level of detail, providing a falsifiable theoretical framework on the impact of HR for DT.

**Keywords:** Serious Game, HR, Human Resources, Employee Behavior Change, Digital Transformation

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## 1. Introduction

The technologies that make up the digital transformation (DT) seem to bear undisputed potential. I.e., combining technologies such as smart sensors, data analytics and co-bots can not only increase efficiency and effectiveness, it potentially alters the value proposition that an organization upholds. Specific examples include reduced waiting time and improvement of performance using smart logistics and using algorithms to increase maintenance efficiency (Woschank et al., 2021). However, as organizations seem increasingly eager to embrace the DT, it becomes evident that technology is only one part of the puzzle that organizations must solve to truly reap the benefits of the DT (Vial, 2019). Accordingly, the DT involves structural and organizational changes to overcome barriers that affect the process with which these technologies create opportunities for the organization. One particular challenge organizations face is how to steer employee behaviors towards what is needed to capture the benefits of the DT. Human resource management (HRM) is the domain that addresses shaping the behavior of employees. Despite that a vast body of knowledge illustrates that HRM affects (employee) performance (Jiang, Lepak, Hu, & Baer, 2012; Schuler & Jackson, 1987), the intricacies of how HRM does this, and in turn how organizations can design their HRM, lacks specific insights that professionals can readily apply in practice.

The goal of this paper is to present the design considerations and initial prototype of DITInLine. This serious game challenges professionals to select and detail a set of human resource (HR) practices (HR configuration) that shapes the employee behaviors needed for the DT. DITInLine is a new addition to a set of serious games that address and capture the challenge of strategy alignment (Collou & Bruinsma, 2017; Collou, Bruinsma & Iacob, 2021) specified for this particular HR and DT challenge. The paper is structured as follows, the concept of strategic alignment and why serious games are a valuable tool to address this challenge is presented first. Subsequently, the design and functionalities of DITInLine are presented, including the specific employee behaviors needed for the DT. Finally, the implications of DITInLine and future work are discussed in the conclusions.

## **2. Strategy Alignment & Serious Games**

Literature on strategy alignment stretches several decades and multiple domains. Examples include information technology (IT) and strategy alignment (Cumps, Viaene, Dedene & Vandenbulcke 2006), HRM and strategy alignment (Gratton & Truss, 2003), and project management and strategy alignment (Alsudiri, Al-Karaghoul, & Eldabi, 2013). Results seem promising. In IT, for example, research has shown that alignment between business and ICT has a positive effect on performance (Cumps, Viaene, Dedene & Vandenbulcke 2006).

Hence, organizations ought to 'align' their domain specific practices to the organizational strategy in order for those practices to contribute to strategic goals. While the strategy is a multifaceted concept, attaining domain to strategy alignment is a complex challenge for five specific reasons.

First, specifying the organizational strategy is a challenge. In small and medium sized enterprises a formalized strategy is rare (Knol, 2013) which makes it hard to specify what it is that domain practices need to be aligned to. Furthermore, even if a formalized strategy is present, it tends to be a moving target (Thompson, 1967); strategy changes as organizations adapt to circumstances making it a challenge to align domain practices continuously.

Secondly, organizational strategies tend to combine aspects of multiple distinct strategies (Collou, van Riemsdijk, Bruinsma, 2019). Accordingly, this raises the need for proportional design of the domain practices to align with organizations 'hybrid' strategies. For HRM, this entails that "an HR configuration should deviate from the ideal type HRM configuration exactly proportional to the extent to which the organizations' strategy deviates from the ideal-type strategy" (Delery & Doty., p.813). This need for fine-grained proportional design of domain practices presents a tremendous challenge.

Especially as thirdly, the domain practices tend to be numerous. Domain practices can be categorized in many subdomains in which multiple practices occur. One example is the HRM domain, in which many practices reside in the subdomains of recruitment & selection, job design, appraisal & compensation, training & recruitment (Collou, 2020). Another example is the IT domain in which a vast number of practices can be categorized into the subdomains service strategy, platform strategy, infrastructure design, security design, and operations & performance practices (Collou, Bruinsma, Iacob, 2020). Furthermore, these domain practices have not been specified to a level of detail needed by professionals that implement and apply them in organizations (Collou, 2020). In addition, these practices and their design are interrelated and need to show consistency amongst one another (Gratton & Truss, 2003).

Fourthly, even if the strategy is specified and a selection of aligned domain practices has been made, the outcome of that selection is characterized by nonlinearity (Miller and Friesen as cited in Meyer et al., 1993). Combining specific designs of IT service strategy and IT infrastructure practices, aligned to organizational strategy, could for example, increase performance greatly for a first period of time after which the effects decrease. Combinations could have different impacts and could not be a simple sum of their parts.

Lastly, equifinality (von Bertalanffy, 1968) seems to occur; multiple combinations of domain practices can lead to similar outcomes. There is no 'one route to success. This makes it hard to pin down which specific combinations do and do not work (Collou, 2020). These complex characteristics of strategy alignment present significant challenges for professionals looking to increase organizational performance by designing a set of domain practices that align with the organizational strategy.

Games can be an effective tool to gain perspective on complex circumstances (Duke, 1974), like strategy alignment. Serious games enable the creation of an abstract representation of the reality of strategic alignment. Using that abstract representation, we can make professionals aware of the importance of alignment between strategy and domain practices; confront them with the vast amount of practices they can select from; challenge them to select and design domain practices; explicitize a theoretical concept, and provide professionals with feedback on the impact of their decisions. A serious game provides a way to present the challenge of strategic alignment to professionals without raising the need for an elaboration on all the aforementioned complex intricacies of domain practices to strategy alignment. Games furthermore provide the opportunity to gather empirical data, adjust the game models accordingly and feed theory development on the concepts represented in the game; in this case HR driven DT.

By combining game mechanics like collaboration and points collection (Hunicke, LeBlanc, Zubek, 2004), a serious game can leverage the 'fun' element of games to increase professionals' motivation to engage (Wouters et al., 2012) with the strategy alignment challenge. Hence, we set out to create a set of serious games that address the domain practices to strategy alignment challenge (Collou, Bruinsma, 2017; Collou, Bruinsma, Iacob 2020). These serious games have shown great potential. As designing domain (in this case HR) practices to steer employee behavior towards what is needed for the DT is one of the main challenges organizations currently face -and that challenge can be addressed effectively by designing HR practices to align to organizational strategy- we set out to create and present DITInLine, the latest addition to the set of strategy alignment serious games.

### **3. DITInLine, a serious game for the DT**

HRM affects employee behavior through the alignment between the HR practices and the organizational strategy; the more aligned these HR practices are the more effective the shaping of specific employee behavior will be. However, as organizational strategies vary, the needed employee behaviors vary (Schuler & Jackson, 1987). This challenge of designing aligned HR practices for specific strategy-related employee behavior is captured and addressed in the serious game InLine (Collou, Bruinsma, 2017). However, the need for employee behavior related to the DT is relevant and urgent regardless of the specific strategy applied by an organization; both cooperative and adhocratic organizations, for example, need specific behaviors to cope with the challenges presented by the DT. This results in the multifaceted challenge of trying to select HR practices that align to the organizational strategy and increase the specific DT employee behavior. This particular challenge is addressed in DITInLine. As such DITInLine can be viewed as an add-on to or specification of the serious game InLine in which the challenge of designing HR practices for a particular strategy is addressed. Now, an elaboration of the theoretical underpinnings of DITInLine is presented after which the functionalities, flow, board and cards of the DITInLine serious game are elaborated upon.

### **4. Theoretical underpinning: strategy, alignment & employee behavior the DT**

The theoretical underpinning of DITInLine is made up of the concept of aligning HR practices to organizational strategy on the one hand, and designing those same HR practices to increase the specific DT behaviors on the other hand.

The importance of HRM alignment has been a topic of importance in HRM research (Delery & Doty, 1996). Detailing the alignment between organizational strategy and HR practices in a serious game leads to a methodological need for a framework of reference. Based on that framework the organizational strategy and the extent of alignment between HR and that strategy can be specified. For DITInLine the competing values model (Cameron & Quinn, 2006) is used as a framework of reference. Accordingly, an organization can strategically focus on the effectiveness criteria 'flexibility' or 'stability', and on effectiveness criteria that emphasize an 'internal' or an 'external' orientation (Cameron & Quinn, 2006). Four strategic orientation types emerge: cooperative, adhocratic, mechanistic and market orientated, depending on the strategic choices an organization makes. These strategies initiate the need for different HR practices. An organization with a cooperative strategy, for example, is in need of HR practices that steer employees towards teamwork while an organization upholding an adhocratic strategy needs HR practices that facilitate innovative employee behavior (for a full description of these strategies and related employee behaviors see appendix 1). 72 HR activities were defined using the commonly applied HR categories recruitment & selection, appraisal & compensation, job design, and training & development. These HR practices can be selected and combined to align to these aforementioned strategies in the serious game InLine (Collou, 2020). DITInLine specifies InLine by introducing the challenge of designing for DT specific behaviors, in addition to designing for alignment. For a more detailed elaboration of the HR and strategy alignment challenge we refer to InLine (Collou & Bruinsma, 2017).

DT refers to organizational change shaped by the widespread diffusion of technology (Hanelt et al., 2021). As organizations set out to enhance their value proposition by embracing the DT they increasingly need employees to (1) adapt to the new technologies being employed and (2) perceive the opportunities presented by these technologies and enact changes proactively. Adaptivity is important; as new and evolving combinations of technologies are implemented employees need to adapt to, and safeguard or even improve their productivity using these new technologies. Hence, employees need to demonstrate flexibility towards new technologies, keep their job skills up to date, cope with uncertainty as these technologies change work procedures in a variety of ways, and adjust to these changes easily (Park & Park, 2019). In addition to these adaptive employee behaviors, organizations undergoing the DT need employees to show proactive behaviors (Doeze Jager et al.,

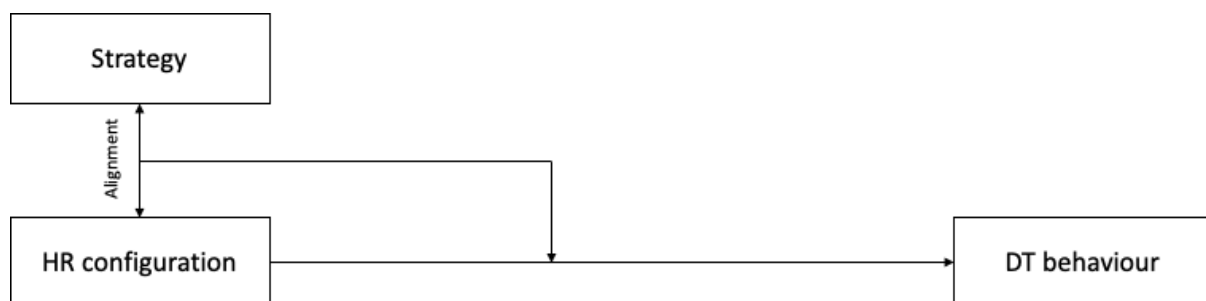
2021). This includes the anticipation of issues related to changes in the work environment, and the initiation and anticipation of solutions thereof (Chonko Jones, 2005). Employees with proactive agility look for new opportunities in the market and follow up, take risks, take advantage of possibilities, and implement new ways of exploiting (technological) opportunities.

Adaptive performance enables employees to adapt to technology driven change. Proactive agile behaviors add a layer of proactivity to these adaptive behaviors enabling employees to not only adapt well but also initiate change and exploit opportunities. The combination of adaptive performance and proactive agile behaviors constitute DT behaviors for the serious game DITInLine. To create DITInLine, these perspectives on HR alignment and the importance of HR activities that shape DT behaviors were specified and merged into the game.

## 5. Designing HR for alignment and shaping DT behavior

The main game goal of DITInLine is to increase the DT specific behaviors of employees using HR practices. The extent to which employees do indeed exhibit DT behavior is presented as the DIT score, a scale ranging from -20 to 100 during the game. -20 equals negative behaviors that hinder the DT while 100 represents ideal DT behavior. To increase DT behavior, players are challenged to select and combine an HR configuration out of a set of 24 HR practices (see appendix 2). These 24 HR practices were selected out of the aforementioned list of 72 HR practices tested, validated and implemented in the serious game InLine (Collou, Bruinsma, 2017). The selected 24 HR practices implemented in DITInLine were based on the extent to which these HR practices affect DT behavior, and also to safeguard potential alignment with the four different organizational strategies of the competing values framework. Subsequently, these individual HR practices were all provided with a score ranging from -50 to +50 that indicates the extent to which they increase or decrease DT behaviors of employees. These scores are based on HRM literature, and hidden for players during the game. During the game professionals select a combination of these HR activities trying to optimize the overall DIT score of the organization at hand.

However, the alignment of these HR practices and the organizational strategy is of importance. Therefore, this alignment was conceptualized in DITInLine as a variable that affects the increase or decrease of DT behaviors through the selected HR practices; the more aligned the selection of HR practices is to the strategy, the more leverage will be attributed to the increase in DT behavior. Hence, a set of HR practices can increase DT behaviors more effectively if that HR configuration is also aligned to the organizational strategy. This alignment ‘leverage’ variable is calculated using the strategic competing values focus scores included in each individual HR practice; job design focused on employees solving complex problems, for example, has 44 percent alignment score to the adhocratic strategy. These alignment scores were obtained using the solidified HR knowledge of HRM professionals (Collou, 2020). See figure 1 for a schematic representation of how alignment between strategy and the HR configuration affects the relationship between that same HR configuration and the DT behavior during the serious game DITInLine.



**Figure 1:** schematic representation of the relationship between strategy, alignment, the HR configuration and DT employee behaviors in DITInLine.

## 6. Flow and gameplay

DITInLine focuses on the key mechanisms relevant to professionals that set out to align the HR practices to the organizational strategy and affect DT behaviors, without being challenged by too much detail (Tsjernikova, 2009). Therefore, DITInLine focusses primarily on the combination of HR practices that can be selected and how those practices affects DT behaviors, affected by HR and strategy alignment. During a game session players go through the following steps.

Players are divided into teams of up to six professionals and play two to three rounds (e.g., years) of DITInLine sitting around the board of the game (see figure 2) that includes all the HR practice cards (see figure 3 for HR practice card examples).

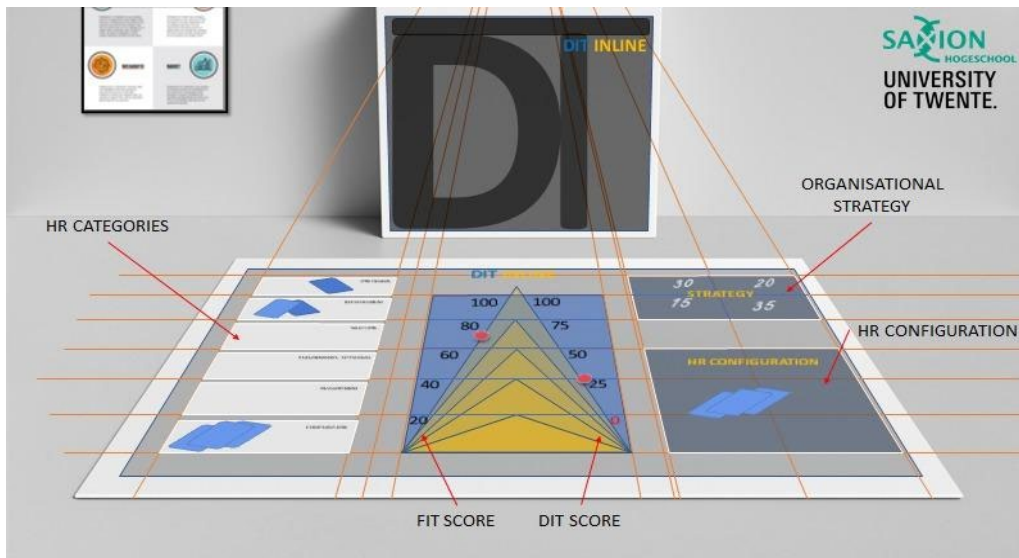


Figure 2: InLine board and cards.



Figure 3: HR practice cards examples

In step 0 players are introduced to the organization that they need to select and design HR practices for. This introduction includes a specification of the competing values strategy of the organization that the HR activities need to be aligned to, and an introduction of the CEO in which the need for DT behavior is made explicit and urgent. The strategy is displayed on the board as a reminder during the game. Once the players are familiar with the organization they start selecting HR practices out of the list of 28 HR practices as a team during step 1. After comparing the selection made between groups, supervised by the gamehost, players are challenged to prioritize their list of HR practices. Subsequently players are challenged to specify to a practical level of detail what they will start doing in terms of those specified HR practices. The final step in a round constitutes the evaluation of their HR practice selection based on the outcomes in terms of DT behaviors (bitscore) and alignment (fitscore). See figure 4.

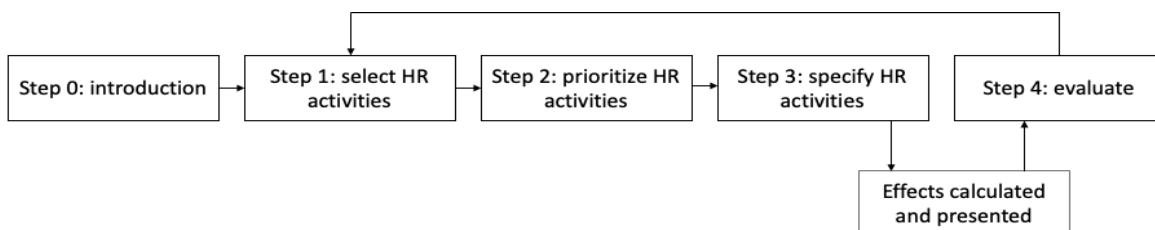


Figure 4: steps during a DITInLine game session

Game sessions are finalized by reflecting on the HR practices selected during the years, how these practices changed and a reflection of the systematic manner with which players focused on attaining an increase in DIT and FIT score.

## **7. Conclusions and future work.**

Organizations are increasingly looking to embrace the benefits of the DT. As they do, challenges in terms of shaping the employee behavior needed to occur. The current paper described the design of the serious game DITInLine, a tool that can aid organizations and their professionals in their quest to optimize DT behaviors through the design of HR activities. During a DITInLine game sessions, players are challenged to select a combination of HR activities that increase DT behaviors and are aligned to the organizational DITInLine provides the opportunity to challenge professionals to make HR decisions explicitly in a playful but systematic way. Motivating professionals to use a systematic approach to increasing DT behaviors, taking into consideration strategy alignment, and providing insight in the outcomes of their decisions potentially increases the quality of their decision making. Furthermore, studying the decisions of professionals in their search for optimal DT behaviors can be a valuable endeavor that can be undertaken using this serious game as it enables studying and analyzing explicit HR choices. DITInLine represents the latest addition to a set of strategy alignment serious games that have shown great potential and outcomes.

As the design of BITInLine, in which the feedback on InLine is taken into consideration, is finalized, test sessions are being planned. The following categories of improvement are specified for the optimization of BITInLine. First, while the alignment scores of the HR activities used in BIFInLine are based on the solidified practical knowledge of HR professionals (), the extent to which they increase DT behaviors is solemnly based on literature. In future research, we strive to adjust these scores based on empirical assessments done by HR professionals. Secondly, defining and specifying potential additional HR activities that influence DT behaviors, and including their alignment scores, is a potential venue for future research. Thirdly, research needs to provide insight on the weighting of a combination of different HR activities. Currently, mutually exclusive practices, or combinations of synergistic practices, are not accounted for. Finally, while first impressions are positive, a more systematic approach to validating the learning effects of BITInLine is needed.

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## Appendices

### Appendix 1: Organizational strategies and related employee behavior

Cooperative employee behaviour	Adhocratic employee behaviour
Employees are focused on the quality of their work rather than speed. Employees enjoy working in teams, have listening skills, provide valuable feedback to colleagues, trust colleagues, divide the work equally and are willing to go the extra mile.	Employees are focused on improving current procedures/products and/or developing and implementing new ideas. Employees are independent thinkers, add value based on innovation, are experts and gain and share knowledge within and beyond organizational boundaries.
Mechanistic employee behaviour	Market employee behaviour
Employees are focused on well-defined procedures and rules that apply to their job. Employees read and comply with job manuals, are punctual, do not slack during working hours, conform to standard work hours and do not question status quo.	Employees are focused on competition. Winning is the ultimate goal and employees are willing to take risks. Profit maximization is achieved by catering to customer needs. Employees proactively search for new market opportunities and are eager to bring new products and procedure to the market.

### Appendix 2: HR practices DITInLine

Nr	HR practice
1	The most important characteristic of job design is that employees need to solve complex problems.
2	The most important characteristic of job design is that employees need to cover other employees' work.
3	The most important characteristic of job design is that employees need to acquire their own assignments.
4	The most important characteristic of job design is that employees have to do clearly arranged work.
5	The recruitment of new employees is focused on accuracy of potential hires.
6	The recruitment of new employees is focused on the extent to which potential hires are able to attract new customers.
7	The recruitment of new employees is focused on the extent to which the potential hires can deliver craftsmanship.
8	The recruitment of new employees is focused on the extent to which the potential hires can come up with innovative solutions.

9	Employees' performance is assessed based on accuracy.
10	Employees' performance is assessed based on innovativeness.
11	Employees' performance is assessed based on commercial skills.
12	Employees' performance is assessed based on their collaboration with others.
13	New employees are hired due to their accuracy.
14	New employees are hired due to their ability to attract new customers.
15	New employees are hired due to their versatility.
16	New employees are hired due to their ability to come up with innovative solutions.
17	Employees are rewarded based on their innovativeness.
18	Employees are rewarded based on their commercial skills.
19	Employees are rewarded based on their production output.
20	Employees are rewarded based on their collaboration with others.
21	Employee development is focused on improving colleague collaboration.
22	Employee development is focused on increasing commercial skills.
23	Employee development is focused on increasing employees' ability to continue to perform assigned tasks.
24	Employee development is focused on increasing employees' ability to come up with innovative solutions.