THE RETURN ON DIGITAL TRANSFORMATION: A HOLISTIC PERFORMANCE SYSTEM BASED ON HIDDEN COST THEORY FOR BRINGING VALUE BACK TO DIGITAL TRANSFORMATION CONSULTING

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ABSTRACT:

The current discourse of consulting firms tends to focus on technology rather than on the analysis of performance, structures, and organizational aspects of technology-enabled change. Against this background, this research draws on an alternative theory of costs, known as “hidden cost”, as opposed to the visible costs that can be measured and tracked by accounting and KPIs, and on organizational problems, known as “dysfunctions”. This exploratory research suggests a tool for evaluating the return on digital transformation and applies it to a small sample of companies in China as a proof of concept. The results of this study indicate the relevance of hidden cost-performance and dysfunctions for the assessment of the expected benefits of such projects, suggesting that digital transformation consulting is not addressing the needs of companies in the midst of these transformations. Rather, we propose the Human-Digital Competitiveness model of digital transformation, a holistic approach, in the evaluation of digital transformation.

Keywords: Digital transformation, hidden cost

INTRODUCTION

The return on investment of the main technologies included in digital transformations, AI, has been documented in best-selling business books like *AI in Practice* (Marr, 2019), *The AI Advantage* (Davenport, 2019), and *Applied AI* (Yao et al., 2019). McDonald's self-service kiosks in Canada are said to result in increased sales "*by 3% to 3.5% during the first year following the introduction of AI"* (Marr, 2019: 108). And, thanks to the integration of data for advanced analytics, GE is supposed to have "*saved $80 million in its first year by eliminating redundancies and negotiating contracts that were previously managed at the business unit level"* (Davenport, 2019: 45). Finally, IBM lawyers claim that *"the use of AI has cut down the total time needed to analyze a trademark search by 50%"* (Yao et al., 2019: 162). Another technology involved in digital transformation, Cloud Computing, has been also documented (Accenture, 2018), as, for instance, in the case of the company, Guardian Life. The company has migrated more than 200 applications to the public cloud, allowing it to shut down its last data center in November 2018. Per Guardian's CIO, the costs associated with running those applications have fallen by 20 to 30 percent since migrating them (Accenture, 2018),

Digital technologies have dramatically reshaped industries (Jeon & Degravel, 2019), forcing companies to pursue large-scale digital transformation (McKinsey, 2018). The aim is either *"to capture benefits of these trends or simply to keep up with competitors"* (McKinsey, 2018: 1). A Boston Consulting Group (BCG) survey of more than 5,000 managers and employees (BCG, 2019) reports that 80% of them said that digitalization was helping them get through the economic slowdown that the pandemic created. It is difficult to reconcile these success stories, however, with the knowledge that more than 66%-70% of digital transformation projects fail (McKinsey, 2018; BCG, 2020) or simply do not achieve their potential. Indeed, more than a third of respondents to the BCG survey felt that their organization lagged behind its competitors (BCG, 2019) in digital transformation.

A concern here is that the consulting companies are themselves not considering novel approaches to digital transformation. For McKinsey (2019), for example, digital transformation is not about breaking silos and supporting teamwork, but only about performance measurement, in particular, through cutting costs. As such, McKinsey (2019) claims that "*Succeeding with a digital transformation requires cutting budgets for legacy operations"* (McKinsey, 2019: 3). However, the benefit related to such cost cuts is not described. Accenture (2018), too, suggests that companies in the industrial equipment sector could cut down the total cost per employee by almost 20 percent (Accenture, 2018: 12), but it never addresses the consequences of these cost cuts. The consulting companies often neglect the issues related to the "humanizing" of digital technology (Sanders, 2018) or the importance of inclusive, supportive, and collaborative organizational culture for digital transformation projects (Olumba, 2018; Sanders, 2016, 2018). The question is, therefore, how to obtain a return on investment on digital transformation, hereinafter referred as "digital return" (Author, 2020), not linked simply to shrinking budgets.

This "digital return" is scarcely mentioned by any of the large consulting groups. In the McKinsey report, *Roadmap for a Digital Transformation*, none of the words or phrases, "return on investment," "cost," or "productivity" appears (McKinsey, 2017). A consulting group that elaborates more than the others on

digital transformation performance is Cap Gemini (2017). For example, they argue that *"The journey toward digital transformation entails harnessing its benefits – such as productivity improvement, cost reduction, and innovation"* (Cap Gemini, 2017: 2), and *"priorities need to be set based on the areas – customer value, revenues, cost position, etc. – where digitization is likely to have the most positive impact"* (Cap Gemini, 2011: 36). Importantly, however, the costs described by Cap Gemini relate only to the visible operational cost of operations, such as the *"use of technology to reduce operational cost, open and agile organizations to react fast, better leverage of existing power, faster time to market"* (Cap Gemini, 2013: 8).

Invisible or hidden costs and related performance outcomes, often called "post-decision surprises" (Savall, 1974; Harrison & March, 1982), represent the unanticipated implementation costs emerging after making strategic decisions within companies (Reitzig & Wagner, 2010; Dibbern et al., 2008). When unanticipated costs arise, they challenge the strategic rationale of the decision-making process. These costs are often hidden from the managerial attention turning them into *ex ante* unaccounted for costs (Larsen et al., 2013). It is essential to address hidden costs, however, as they can be harmful to companies. Hidden costs are the consequences of dysfunctions within companies and represent the impact of the informal power of employees, as they each have leeway to participate or not in a change process, e.g., in the case of a digital transformation. One can illustrate hidden costs in a company implementing digitization in a sales department, and downsizing workforce due to automation of some tasks: dissatisfied sales reps refrained from releasing important data regarding customers, resulting in commercial set-backs. The hidden cost of low loyalty proved to be twice as much as the cut of payroll.

The research question is, therefore: what is the impact of hidden cost and dysfunctional performance in companies undergoing digital transformation? In order to address this question, this paper first establishes the theoretical underpinnings of hidden cost and dysfunction. It then demonstrates the application of this theory in the development of a survey instrument. It reports on the results of the survey's conduct in several companies in China. And, finally, it analyzes those results and proposes the Human-Technology Performance model (Author, 2020) as a more appropriate and functional approach to digital transformation.

THEORY

Hidden Cost

For the purposes of this paper, the hidden cost approach is suggested to order to evaluate the return on investment of digital transformation. Visible costs are measured and monitored by accounting systems, including such things as labor costs or raw material expenditures. By contrast, hidden cost is defined as "*those costs and performances that are not detected by the company information system, including budgets, income statements (P&L), general accounting, analytical accounting or piloting logbooks*" (Savall & Zardet, 2008: 27). In other words, hidden cost is not identified, quantified, or controlled by general accounting, by cost accounting or by budgets. Even if lay-offs enable an

enterprise to reduce some visible costs, they entail some side effects, such as decreased employee know-how, greater disorganization and lower confidence.

Dysfunctions

Hidden costs are related to organizational problems, called "dysfunctions" (Savall & Zardet, 2008: 28.). Dysfunctions "*represent problems or difficulties that constantly disturb the life of companies. Such dysfunctions prevent companies from fully achieving its objectives and efficiently using its human resources and material resources* (Savall & Zardet, 2008: 28). More precisely, dysfunctions require regulations that create hidden costs. Savall and Zardet (2008) identify six types of dysfunctions: working conditions, work organization, communication / coordination / cooperation (3C), time management, integrated training and strategy implementation. For instance, working conditions dysfunction may result from the silos between departments of a company, requiring employees to disturb their colleagues who need to concentrate on developing new products. Work organization dysfunction may be related to the lack of match between customer quality requirements and the current procedures of the company. Communication / coordination / cooperation (3C) may occur between departments, such as the marketing department and the R&D department, resulting in delays in the creation of new products. Time management dysfunction is often related to the fact that managers and supervisors spend more time on routine tasks than on development activities. The lack of integrated training appears when employees are not adequately trained in new production techniques. The dysfunctions related to strategy implementation is obvious when employees are not aware of the development activities and tasks to be undertaken.

Each of these six types of dysfunctions include many sub-categories. For the sake of simplicity, this research only focuses on those introduced in table 1 (Copyright ISEOR).

Dysfunction	*Sub-categories*
Working conditions	1. Work hours and schedule 2. Physical work conditions
Work organization	1. Distributions of tasks, missions and functions 2. Absenteeism regulation 3. Work motivation 4. Job autonomy 5. Workload

Communication/ coordination/ cooperation	1.Communication/coordination within a department 2.Communication/coordination with other departments 3.Communication/coordination between headquarters and distributors 4.Communication/coordination between headquarters and branch offices 5.Communication/coordination at the level of the board of directors 6.Transmission of information within the company and with third parties 7.Vertical communication/coordination 8.Horizontal communication/coordination
Time management	1.Deadline compliance 2.Activity scheduling 3.Task achievement improvement 4.Time management improvement
Integrated training	1.Job training adequacy 2.Competency improvement
Strategy implementation	1.Corporate strategy linkages 2.Corporate strategy implementations 3.Information systems improvement 4.HR management improvement 5.Overall improvement of the mode of management

Table 1: Dysfunctions

These dysfunctions link to hidden costs through concrete disturbances or abnormal operations. As depicted in the Table 2, these hidden costs include staff turnover, low-quality work, absenteeism, occupational injuries and disease and direct production gap. The direct production gap or direct productivity variance includes non-production or missed production.

The second kind of hidden costs is the regulation of dysfunctions. They are grouped into two kinds of activities: human activities and product consumption (goods or services). This classification of regulation is then applied to hidden cost calculation, which involves six components: overconsumptions, non-production production, non-creation of potential, risks, excess salary and time wasted. These six components are the financial consequences of dysfunctions. (Savall & Zardet, 2008: 28-29) (see Table 3).

ISEOR Model	*Characteristic*
Indicators of hidden costs	• Absenteeism • Occupational injuries and disease • Staff turnover • Low-quality work • Direct production gaps

Financial consequences of dysfunctions	• Excess salary • Wasted time and/or overtime • Overconsumption • Non-production • Non-creation of potential risks

Table 2: Indicators of Hidden Costs; Financial consequences of dysfunctions

The link between these three levels may be understood through the nature of these elements. Dysfunctions may be considered as social problems, causing regulations at the economic (or organizational) level. The study of the price and unit cost of the economic regulation of these social dysfunctions lead to the financial level, or the monetary evaluation of the incidence of these regulations.

METHODOLOGY

To achieve an in-depth understanding of the impact of hidden costs and performance on return on digital transformation, the current exploratory study adopted a qualitative research methodology (Yin, 2017). The study follows a sequential exploratory strategy aiming to explore distribution of phenomenon within a chosen population by prioritizing qualitative aspects (Morse, 1991; Morgan, 1998; Creswell, 2018). For novel phenomena where the pre-existing state of the art is either absent or scarce, qualitative methods provide a comprehensive understanding and upper trustworthiness of the research topic and subsequent propositions for further research (Bryman, 2004; Creswell, 2018). By applying qualitative methodology, the current research aims to ensure holistic analysis of economic and social aspects for relatively small research sample (Clifford et al., 2013).

At the initial stage, the research design and process evolved on the base of the conceptual framework developed from the body of literature related to hidden cost and dysfunctions (Miles, Huberman, & Saldana, 2019). Subsequently, we developed and electronically distributed a short cross-sectional questionnaire facilitating a rapid turnaround in data collection at a single point in time (Lewis-Beck, et al., 2004). The sampling design is a single-stage sampling presuming researchers' awareness and access to names in the research population (Babbie, 2001; Creswell, 2018). The study provides contextual variety (Yin, 2017) through incorporating different Chinese companies of various size and industrial sectors, such as banking, telecommunication, agricultural machinery, securities financial services, consulting, think tank, and biopharmacy (Table 3). The scope of research participants comprises senior management level with various levels of experience. In total, we collected seven questionnaires from the companies with ongoing digital transformation projects. The study is based on six companies, since one research company had a digital transformation project in the Research and Development stage.

Industry Sector	*Employees*	*Digital Transformation Projects*
Banking	>300,000	Yes
Telecommunication	>200,000	Yes
Agriculture machinery	20,000	Yes
Securities financial services	15,000	Yes
Consulting	25	Yes
Think tank	100	Yes
Biopharmacy	>5,000	Yes

Table 3: Characteristics of the case study companies

The questionnaire's core focus was directed towards the above-presented variables related to hidden cost and dysfunctions in the realm of digital transformation. More precisely, the questionnaire addressed dysfunctions, indicators of hidden costs, and financial consequences of dysfunctions (see the Appendix for the survey instrument). The items were aligned with a 4-point Likert scale ranging from "strongly agree" to "strongly disagree," and comment sections to ensure additional research participants' insights (Batterton & Hale, 2017). The questionnaire data were systematically, qualitatively analyzed along with the proposed theoretical framework and conceptual model to create a cohesive understanding of the research phenomenon related to the impact of hidden cost and dysfunctions on return on digital transformation. In line with the ethical guideline, the study ensures the confidentiality of data and anonymity of the research participants (Lewis-Beck et al., 2004; Sieber et al., 2013). The following section presents a holistic analysis of the research results.

RESULTS

Executives of seven companies in different industries filled out the questionnaire as a pre-test. One company in the securities financial service industry reported to be in the research and development stage in terms of digital transformation projects. Therefore, the data analysis comprised six companies that already initiated digital transformation projects. We analyzed the data by the six types of dysfunctions, the indicators of hidden cost and the financial consequences of dysfunctions, introduced in the theory section. In the following, we describe their results in an explorative way to indicate first results that build the basis for further research.

The score in the next tables presents the average score of the six companies for each subcategory and the standard deviation. The scale used ranged from 1 = strongly agree, 2 = agree, 3 = disagree, to 4 = strongly disagree. The green to yellow color codes illustrate the dysfunctions which have been improved through digital transformation projects. The orange color codes hint towards dysfunctions which could not be solved through digital transformation (see Appendix B for a breakdown of these results by industry).

Category	*Sub-categories*	Average	STD
Working conditions	Work hours and schedule	1.3	0.52
	Physical work conditions	1.7	0.52
Work organization	Distributions of tasks, missions and functions	2.0	1.10
	Work motivation	2.2	1.17
	Job autonomy	2.2	0.75
	Absenteeism regulation	2.0	0.63
	Workload	1.7	0.52
Communication/ coordination/ cooperation	Communication/coordination within a department	1.8	1.17
	Communication/coordination with other departments	2.0	1.10
	Communication/coordination between headquarters and distributors	2.0	0.89
	Communication/coordination between headquarters and branch offices	1.8	0.41
	Communication/coordination at the level of the board of directors	1.8	0.75
	Transmission of information within the company and with third parties	1.8	0.41
	Vertical communication/coordination	1.8	0.41
	Horizontal communication/coordination	1.5	0.55
Time management	Deadline compliance	1.8	0.75
	Activity scheduling	1.7	0.52
	Task achievement improvement	1.8	0.41
	Time management improvement	1.8	0.41
Integrated training	Job training adequacy	2.2	0.75
	Competency improvement	2.3	0.52
Strategy implementation	Corporate strategy links	1.7	0.82
	Corporate strategy implementation	1.3	0.52
	Information systems improvement	1.3	0.52
	HR management improvement	1.5	0.84
	Overall improvement of the mode of management	1.5	0.55

Table 4: Results: Dysfunctions

As the research results clearly depict (see Table 4), managers jointly agree that digital transformation improves Working conditions. Among the scrutinized dysfunctions, in fact, Working conditions and Strategy implementation had the strongest positive relation with digital transformation (Average range 1.3-1.7, STD less than 1). The majority of participants reflect a positive impact of digital transformation on Work hours and schedule, and both biopharmaceutical and agriculture research companies showed a particularly strong positive relation concerning this sub-category. Meanwhile, the impact of digital transformation on the Work organization dysfunction was more modest but still positive (Average range 1.7-2.2). While Workload had the highest agreement in terms of improvement due to digital transformation (1.7, STD=0.52), Work motivation and Job autonomy appear to have a less positive relation with digital transformation. In contrast to others, the biopharmaceutical company reported a very low effect of digital transformation on almost all sub-categories of the Work organization dysfunction, except Workload, while the banking and agriculture company were less optimistic concerning the impact of digital transformation on Work motivation and Regulation of absenteeism respectively.

In addition, the preliminary results show a tendency for communication / coordination / cooperation (3C) in the company to be strengthened rather than weakened by digital transformation projects (Average range 1.5-2.0). All companies agreed that digital transformation improved both vertical (1.8, STD=0.41) and horizontal communication / coordination (1.5, STD=0.55). Interestingly, in the biopharmaceutical company digital transformation projects did not positively affect communication/coordination with other departments or within departments. By contrast, the other companies were more optimistic and reported strong positive effects on their communication/coordination at the department-level. Similarly, Time Management within companies appears to be improved by the implementation of digital transformation projects, given the average range of 1.7-1.8. While employees are propelled to comply with deadlines, they witness an improved scheduling of their activities within the company. Moreover, given the low standard deviation (0.41), the interviewed companies agree that digital transformation enables better task achievement as well as time management. On the other hand, the companies do not seem to be convinced with the criticality and adequacy of job trainings when implementing digital transformation projects given that our results highlight a relatively high average of 2.2 (with a 0.75 STD). Our results draw the highest average for Competency Improvement (2.3). Interestingly, employees are not fully persuaded that their competencies would be improved by digital transformation. Interestingly as well, the respondents felt that Strategy Implementation was enhanced by digital transformation.

Category	***Sub-categories***	*Average*	*STD*
Indicators of hidden cost	Absenteeism	2.8	0.98
	Occupational injuries and disease	2.5	0.84
	Staff turnover	2.8	0.75
	Low-quality work	2.2	0.98
	Direct production gap	2.5	0.84

Table 5: Results: Indicators of hidden cost

The Indicators of hidden costs reflect clear concern with digital transformation, suggesting that it does not improve, and in fact, makes situations of absenteeism (avg. 2.8, 0.98 STD), occupational hazards (avg. 2.5, 0.84 STD), staff turnover (avg. 2.8, 0.75 STD), work quality (avg. 2.2, 0.98 STD) and production levels (avg. 2.5, 0.84 STD) weaker, as shown in Table 5. Striking here are the results from the Biopharmacy industry, with very deep worry about the impact of digital transformation across all of these categories, showing an average score of 4, full disagreement. As well, Agriculture companies reflect deep concern about Absenteeism (avg. 4.0).

Category	***Sub-categories***	Average	STD
Financial consequences of dysfunctions	Excess salary	2.5	1.05
	Time wasted / overtime	2.8	0.75
	Overconsumption	2.5	0.55
	Non-production	2.7	0.52
	Non-creation of potential	2.5	0.55
	Risks	2.4	0.55

Table 6: Results: Financial consequences of dysfunctions

Equally troubling are the results concerning the Financial consequences of dysfunctions. These indicate that digital transformation will not only not improve, but make incorrect pay (avg. 2.5, 1.05 STD), wasted time (avg. 2.8, 0.75 STD), incorrect production (avg. 2.5, 0.55 STD and avg. 2.7, 0.52 STD), weak leverage of worker potential (avg. 2.5, 0.55 STD) and, generally, risks to the company (avg. 2.4, 0.55 STD) worse through their implementation. Here, as well, the results show differentiation by industry, though somewhat less so that for the hidden cost measures. Biopharmacy companies are deeply worried about the impact of digital transformation on Excess salary and Wasted time and overtime; Agriculture and Telecom companies average 3.0 for all of these measures, except that Telecom is less worried about Excess salary (avg. 2.0).

DISCUSSION

Overall, consulting groups in digital transformation neglect both hidden cost and financial consequences of dysfunctions. The visible performance stemming for digitization is reversed by a huge amount of hidden costs (Savall, 1974). Conversely, action plans consisting in investing in Human Potential Development simultaneously with the digitization process results in outstanding overall and sustainable performance of the digital transformation. Human Potential Development can be considered as the intangible infrastructure of sound digital transformation. It mostly consists in time budget devoted to improve work organization, working conditions, communication-coordination-cooperation, time management, integrated training and implementation of the strategy. Downplaying such intangible investment enables the reduction of visible costs in the short run, but it results in huge dysfunction costs that hamper sustainable economic performance. This hypothesis already demonstrated in the case of other kinds of technological projects requires further experiments.

Human-Digital Competitiveness Model

Most consulting groups, such as BCG, McKinsey, or Accenture, espouse the MIT definition of digital transformation as "*the use of technology to radically improve performance or reach of enterprises*" (Westerman, Bonnet & McAfee, 2014: 1). However, it is not clear how to achieve performance improvements if the first step of such transformation does not carefully define the objectives. We propose, instead, a novel approach to digital transformation, the Human-Digital Competitiveness Model (HDC) (Author, 2020). This model includes three dimensions: competitiveness, humans and structure and digital technologies (see Figure 1).

Competitiveness. In the competitiveness dimension, the HDC model takes *Hyper-competitiveness* (Annosi & Brunetta, 2017), *Holistic performance* (Jeon & Degravel, 2019), and *Customer centricity*, including customer embeddedness and value co-creation (Svahn, Mathiassen & Lindgren, 2017), into account. In particular for this study, the holistic performance measurement system integrates visible and hidden cost and performance (Savall, 1974) with transient competitive advantage and ambidexterity (Annosi & Brunetta, 2017), the first conditions required to achieve digital returns.

Humans and structure. The three components of the Humans and structure dimension are *Workforce differentiation, Organizational transformation methods*, and *Business process innovation*. Workforce differentiation, the approach to HR that considers employees in terms of their ability and contribution and places them appropriately in the company where they will thrive. This part of the Structure dimension is clearly functioning in this study, as shown by both the hidden cost and financial consequences of dysfunction results. A more flexible and targeted HR approach would address all of these issues shown in this data. Also essential to successful digital returns is attention to Organizational Transformation, which takes advantage of all the manifold of available methods, from TQM to lean or six sigma (Cummings & Worley, 2008: 2). And, finally, the third level of the Structure dimension, usually neglected by the consulting groups, Business Process Innovation (BPI) (Davenport, 1993), leverages the innovative and creative ability of people for achieving performance improvements.

Digital Technologies. The third dimension of the HDC model, digital technologies, includes *Technological infrastructure, Enterprise architecture* and *Development methods.* With Technological Infrastructure, a limitation of the current discourse on digital transformation is a reductionist approach to technology; instead, a technological infrastructure, also called a digitized process platform (Ross, Weill & Robertson, 2006) should drive core operations. Enterprise architecture (Ross, 2003) integrates business process and management directly with the panoply of data and application architectures currently available. Development methods addresses and overcomes the neglect of agile technological development methods such as XP (Schwaber & Beedle, 2002).

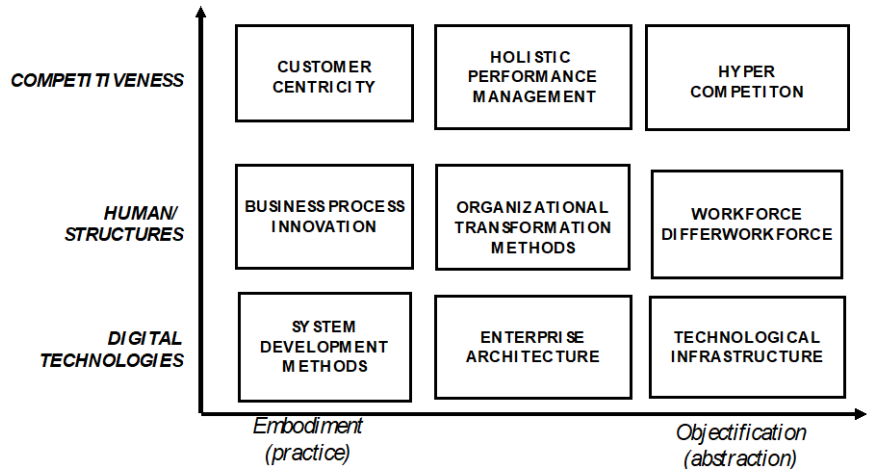

Figure 1: The Human-Digital Competitiveness model of digital transformation (Author, 2020)

The implementation of the HDC model could serve to address the concerns raised by this study in terms of hidden cost and dysfunctions. Future research should explore other subsets of the HDC model to identify other weaknesses of digital transformation implementations that the HDC model might be well-suited to overcome.

CONCLUSION

This research aims to bring "value back into digital transformation" (Hillman, 2020: 1). Indeed, the current discourse of consulting groups neglects to calculate the return on investment of digital transformation. This consulting discourse tends to focus on technology rather than a detailed analysis of performance, structures and the organizational aspects of technology. It also misses accounting for the hidden costs and financial impacts of dysfunction. The results of this exploratory study suggest a research agenda for the quantification of the digital return in order to bring value back to digital transformation consulting, relying on the Human-Digital Competitiveness model of digital transformation, including the need of a holistic performance system (Jeon & Degravel, 2019). Because the HDC model relies on human potential, such emerging debates are an opportunity to lower resistance to change because they tend to "*bring the manager back into management*" in the evaluation of digital transformation (Hillman, 2020: 1).

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APPENDIX
Appendix A
Questionnaire: Digital Transformation and Hidden Costs

Your company	*1. How many employees?*	
	2. Which industry?	
	3. What kind of products or services?	
Digital transformation project	*4. Are digital transformation projects already been conducted in your company?*	
	5. Is there one currently?	
	6. Is there one scheduled?	
	7. For which department or process?	
	8. When would it start?	
	9. Who is promoting it? the CEO?	

Do you think that the digital transformation project may improve the following problems?

1 = strongly agree; 2 = agree 3 = disagree 4= strongly disagree

Working conditions	*1. Work hours / work schedule*	*1*	*2*	*3*	*4*
	2. Physical work conditions	*1*	*2*	*3*	*4*
Work organization	*1. Distributions of tasks, missions and functions*	*1*	*2*	*3*	*4*
	2. Absentee regulation	*1*	*2*	*3*	*4*
	3. Work motivation	*1*	*2*	*3*	*4*
	4. Job autonomy	*1*	*2*	*3*	*4*
	5. Workload	*1*	*2*	*3*	*4*

Do you have some comments? such as how you believe the digital transformation may solve these dysfunctions?

Communication/ coordination/ cooperation	*1. Communication/coordination within the department*	*1*	*2*	*3*	*4*
	2. Communication/coordination with other departments	*1*	*2*	*3*	*4*
	3. Communication/coordination between headquarters and distributors	*1*	*2*	*3*	*4*
	4. Communication/coordination between headquarters and branch offices	*1*	*2*	*3*	*4*
	5. Communication/coordination at the level of the board of directors	*1*	*2*	*3*	*4*
	6. Transmission of information within the company and with third parties	*1*	*2*	*3*	*4*
	7. Vertical communication/coordination	*1*	*2*	*3*	*4*

	8. Horizontal communication/coordination	*1*	*2*	*3*	*4*

Do you have some comments? such as how you believe the digital transformation may solve these dysfunctions?

Time management	*1. Deadline compliance*	*1*	*2*	*3*	*4*
	2. Activity scheduling	*1*	*2*	*3*	*4*
	3. Task completion and quality improvement	*1*	*2*	*3*	*4*
	4. Time management improvement	*1*	*2*	*3*	*4*

Do you have some comments? such as how you believe the digital transformation may solve these dysfunctions?

Integrated training	*1. Job training adequacy*	*1*	*2*	*3*	*4*
	2. Competency improvement	*1*	*2*	*3*	*4*
Strategy implementation	*1. Corporate strategy links*	*1*	*2*	*3*	*4*
	2. Corporate strategy implementation	*1*	*2*	*3*	*4*
	3. Information systems improvement	*1*	*2*	*3*	*4*
	4. HR management improvement	*1*	*2*	*3*	*4*
	5. Overall improvement of the mode of management	*1*	*2*	*3*	*4*

Do you have some comments? such as how you believe the digital transformation may solve these dysfunctions?

Indicators of hidden cost	*1. Absenteeism*	*1*	*2*	*3*	*4*
	2. Occupational injuries and disease	*1*	*2*	*3*	*4*
	3. Staff turnover	*1*	*2*	*3*	*4*
	4. Low-quality work	*1*	*2*	*3*	*4*
	5. Direct production gap	*1*	*2*	*3*	*4*

Do you have some comments? such as how you believe the digital transformation may help improving these hidden costs?

Financial consequences of dysfunctions	*1. Excess salary*	*1*	*2*	*3*	*4*
	2. Wasted time	*1*	*2*	*3*	*4*
	3. Overconsumption	*1*	*2*	*3*	*4*
	4. Non-production	*1*	*2*	*3*	*4*
	5. Non-development of potential	*1*	*2*	*3*	*4*
	6. Risks	*1*	*2*	*3*	*4*

Do you have some comments? such as how you believe the digital transformation may avoid these costs?

Appendix B

Category	***Sub-categories***	Banking	Telecom	Agriculture	Consulting	Think tank	Biopharm	**Avg.**	**STD**
Working conditions	Work hours/ work schedule	2	2	1	1	1	1	1.3	0.52
	Physical work conditions	2	2	1	2	2	1	1.7	0.52
Work organization	Distributions of tasks, missions and functions	2	2	2	1	1	4	2.0	1.10
	Work motivation	3	2	1	2	2	3	2.2	1.17
	Job autonomy	2	2	1	2	2	3	2.2	0.75
	Absenteeism regulation	1	2	3	2	1	4	2.0	0.63
	Workload	2	2	2	1	1	2	1.7	0.52
Communication / Coordination / Cooperation	Communication/ coordination within a department	2	1	2	1	1	4	1.8	1.17
	Communication/ coordination with other departments	2	2	2	1	1	4	2.0	1.10
	Communication/ coordination between headquarters and distributors	3	2	1	2	1	3	2.0	0.89
	Communication/ coordination between headquarters and branch offices	2	2	1	2	2	2	1.8	0.41
	Communication/ coordination at the level of the board of directors	2	2	1	2	1	3	1.8	0.75
	Transmission of information within the	2	2	1	2	2	2	1.8	0.41

	company and with third parties								
	Vertical communicatio n/ coordination	2	2	1	2	2	2	1.8	0.41
	Horizontal communicatio n/ coordination	1	2	1	2	1	2	1.5	0.55
Time management	Deadline compliance	3	1	2	2	2	1	1.8	0.75
	Activity scheduling	2	2	2	2	1	1	1.7	0.52
	Task achievement improvement	2	2	2	2	1	2	1.8	0.41
	Time management improvement	2	2	2	1	2	2	1.8	0.41
Integrated training	Job training adequacy	2	2	3	2	1	3	2.2	0.75
	Competency improvement	2	2	3	2	2	3	2.3	0.52
Strategy implementation	Corporate strategy links	2	2	1	1	1	3	1.7	0.82
	Corporate strategy implementation	2	2	1	1	1	1	1.3	0.52
	Information systems improvement	2	2	1	1	1	1	1.3	0.52
	HR management improvement	1	2	3	1	1	1	1.5	0.84
	Overall improvement of the mode of management	2	2	2	1	1	1	1.5	0.55

Results: Dysfunctions

Categ ory	***Sub-categories***	Bank ing	Telec om	Agricul ture	Consul ting	Think tank	Bioph arm	***Avg.***	***STD***
Indic ators	Absenteeism	2	3	4	2	2	4	2.8	0.98
	Occupational	2	2	2	3	2	4	2.5	0.84

	injuries and disease								
	Staff turnover	3	2	3	3	2	4	2.8	0.75
	Low-quality work	2	2	1	2	2	4	2.2	0.98
	Direct production gap	2	2	3	2	2	4	2.5	0.84

Results: Indicators of hidden cost

Category	***Sub-categories***	Banking	Telecom	Agriculture	Consulting	Think tank	Biopharm	***Avg.***	***STD***
Financial consequences of dysfunctions	Excess salary	3	2	3	2	1	4	2.5	1.05
	Time wasted overtime	2	3	3	3	2	4	2.8	0.75
	Overconsumption	2	3	3	3	2	2	2.5	0.55
	Non-production	2	3	3	3	2	3	2.7	0.52
	Non-creation of potential	2	3	3	2	2	3	2.5	0.55
	Risks	2	3	3	/a	2	2	2.4	0.55

Results: Financial consequences of dysfunctions