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# Disclosure On Online Sustainability Platforms and Value Creation for Digital vs. Non-Digital Firms

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## ABSTRACT

This paper aims to study the sustainability practices disclosures on online sustainability reporting platforms. Drawing on the scope of operant resources, this study goes beyond the research sphere by including extended organization components. We examine the impacts of both internal (employee-oriented) and external (customer-oriented) sustainability practices on a firm's financial performance. Especially, we study the differences between digital and non-digital firms regarding the impacts. This study utilizes analytics techniques to extract concepts from firms' digital sustainability reports disclosed on a sustainability reporting platform. A matched 3-year panel dataset and econometric estimation methods are used to test two sets of hypotheses. We found that both sustainability practices disclosure can improve firm performance. We also found that digital firms can gain better firm performance with customer-oriented sustainability practices disclosures on online platforms. This study contributes to the literature of IT for social sustainability. It also provides practical implications for online sustainability reporting.

## Keywords

Sustainability, online platform, digital firm, operant resources.

## INTRODUCTION

Compared to traditional information technologies such as a spreadsheet, webpage, software application, online platforms could enable multiple agents to sense and adapt various activities for sustainability collaboratively. Through online sustainability reporting, companies can send a positive signal to stakeholders, including investors, customers, and employees (Arikan et al., 2016). The primary focus of the extant information systems (IS) research was to evaluate traditional information technology (IT) artifacts in a sustainability context. However, today, online digital platforms have become a new avenue for sustainability research (Dhanorkar, 2018). Beyond the exploration of IT for environmental sustainability (i.e., green IS), studies need to apply a more comprehensive approach and include the influences of IT on our society and economy. Many digital firms that leverage information technologies to disrupt the business models are transforming many industries. Digital firms establish business relationships through digital networks and manage corporate assets digitally (Laudon and Laudon, 2006). Companies can improve operational efficiency and flexibility, increase management effectiveness, and reduce cost using IT (Markus and Loebbecke, 2013). However, because of the digitally enabled relationship and management, there are also challenges in digital firms compared to traditional non-digital firms.

To address these gaps, this study has two main research questions: (1) what are the impacts of internal and external social sustainability strategies embedded in firms' online sustainability reports on firm performance? (2) what are the differences between digital firms and non-digital firms regarding these impacts? To examine these two research questions, we develop two sets of hypotheses.

## THEORETICAL FRAMEWORK

### Scope of Operant Resources

Literature has showcased the importance of operant resources scope (i.e., internal and external operant resources) to improve understanding of the relationship between social sustainability practices and value creation. A study by Beitelspacher et al. (2012) suggested two sets of operant resources: internal (organizational) and external (relational). The study also indicates that

both internal and external operant resources are critical for companies to create value and sustain competitive advantage. On the one hand, companies need to have a strong internal orientation, and on the other hand, companies have to take care of external stakeholders. Internal operant resources refer to operant resources that are gained through the interactions inside an organization, whereas external operant resources are operant resources that are developed through interactions with external stakeholders (Akaka and Vargo, 2014). Prior studies have suggested that the indirect effect of non-financial indicators such as sustainability indicators may impact through customer relations management (Margolis and Walsh, 2003), employee engagement such as attracting and retaining talent (Bhattacharya et al., 2008), or as a positive signal to stakeholders such as investors, customers, and employees (Nishant et al., 2017). Thus, firms can benefit from the online sustainability reporting that signals the internal employee-oriented sustainability practices as well as the external customer-oriented sustainability practices for their financial performance. Therefore, we hypothesize that:

*Hypothesis 1-a: there is a positive association between employee-oriented sustainability practices disclosure and firm performance*

*Hypothesis 1-b: there is a positive association between customer-oriented sustainability practices disclosure and firm performance*

**Digital Firms and Digital Transformation of Businesses**

The advancement of information technology or digital technology that includes hardware and software facilitated the digital disruption in business. Businesses can be classified into four groups (Sambamurthy and Zmud, 2017). Besides the IT companies that are digital technology products or service providers, there are three types of organizations, considering the digitalization purpose. Table 1 provides the comparison of the digital firm and non-digital firm, along with some business examples. While digital firms are shaking up traditional industries, the sustainability ideal is emerging as a concern for many of them (Andal-Ancion et al., 2003). Undoubtedly, firms face the challenge of balancing the act of sustainable development. Many of these digital firms are contributing significantly to the sharing economy, creating efficient global and unattached workspaces, or monetizing the downtimes. Still, it is not clear whether digital firms could help businesses and society to deliver on ambitious sustainability goals. A common criticism for digital firms is that they operate on steroids, i.e., a fast-paced growth path of embracing digital capabilities for success in a shorter period (Huang et al., 2017). They adopt IT-enabled strategies to shape their products, services, and innovations in a successful and fast transformative mode, leading and catering to the changes brought in due to IT.

Classification	Non-Digital Firm		Digital Firm	
Orientation	Business Process		Business Purpose	
IT Usage Case	Data processing	Coordination	Mobility	Digital technology product or service providers
Digitization Architecture	Centralized	Distributed	Ubiquitous	
Digitalization Purpose	Efficiency	Optimization	Community-Building	
Business Examples	Coca Cola, Merck, 3M, Rubbermaid	Walmart, Southwest Airlines	Google, Amazon, Airbnb, Uber	

**Table 1. Digital Firm and Non-Digital Firm**

However, the underlying concern is that digitalization is enabling companies to divide jobs up into discrete tasks that can be parceled out to workers when they’re needed. Pay for these tasks is determined by the demand for that particular job at that particular moment, which is also creating an inequality challenge that big money goes to corporations who own the enabling software with small payments going to the workers. Also, freelance workers have no access to employee benefits, such as insurance coverages and retirement plans, compared to full-time workers in the non-digital firm. As the number of freelance workers grows bigger and bigger among the population, such digital firm model will raise the question of social sustainability eventually. Thus, due to the nature of digital firms, although the digital firms make the same efforts on employee-oriented sustainability practices, they get fewer benefits compared to non-digital firms. As a result, we hypothesize that:

*Hypothesis 2-a: non-digital firms have better firm performance than digital firms through employee-oriented sustainability practices disclosure.*

On the other hand, consistent with the service-dominant logic, with the digitalization of products and services, firms can co-create value with customers through more customer-oriented sustainability practices (Akaka and Vargo, 2014). We argue that this effect is stronger for digital firms compared to non-digital firms based on three mechanisms: customer informedness (Li et al., 2014), customer empowerment (Acar and Puntoni, 2016), and customer engagement (Mohammad, 2020). Therefore, we hypothesize that:

*Hypothesis 2-b: digital firms have better firm performance than non-digital firms through customer-oriented sustainability practices disclosure.*

## METHODS

We use a dataset obtained from the Global Reporting Initiative (GRI) and Compustat to test the two sets of hypotheses. We used data mining techniques to analyze the annual sustainability reports of 969 firms across industries from 2013 to 2015 from the GRI. Based on the text analysis, we coded whether a firm chose to report the employee and customer sustainability practices as binary variables. Based on the classification of digital firms and non-digital firms, the coding of digital firm variable was ratified through a three-researchers interrater validation process, which is commonly used for such coding approaches. Prior research has suggested that variables such as firm size, the revenue of firms, and industry type should be considered when studying the link between sustainability reporting and firm financial performance (McWilliams and Siegel, 2000). We matched this dataset with firms in the Compustat database to obtain variables about firm attributes such as firm size and firm profitability (Nishant et al., 2017). As a result, matched data on 364 firms are available in our merged panel dataset.

The dependent variable is firm performance, which is reflected by the firm profitability. It is measured by the log value of Return on Assets (ROA, net income/total assets). The two variables that are used to measure the sustainability strategies embedded in the online reports are employee orientation (EMPO) and customer orientation (CUSO). We used Generalized Least Squares (GLS) estimation for the analysis. We tested for multicollinearity by computing variance inflation factors (VIFs) for all estimation models. The highest mean VIF was less than 2.0 in all models, confirming that multicollinearity is not a serious concern.

## RESULTS

The results of the main analysis are shown in Table 2. First, column 1 and column 2 present the direct relationships, and then

VARIABLES	(1) Firm Performance	(2) Firm Performance	(3) Firm Performance	(4) Firm Performance
EMPO	<b>0.758**</b> (0.345)		0.839* (0.433)	
CUSO		<b>0.726**</b> (0.340)		0.690* (0.412)
DigitalFirm (DF)			0.326 (0.679)	0.422 (0.689)
DF×EMPO			0.221 (0.710)	
DF×CUSO				<b>0.356*</b> (0.211)
PriorPerformance	0.749*** (0.110)	0.745*** (0.110)	0.751*** (0.110)	0.746*** (0.110)
Revenue	-0.058 (0.074)	-0.075 (0.074)	-0.057 (0.074)	-0.074 (0.074)
DebtRatio	1.126 (0.868)	1.115 (0.869)	1.137 (0.869)	1.110 (0.870)
FirmSize	0.002 (0.001)	0.002* (0.001)	0.002 (0.001)	0.002* (0.001)
Constant	3.027 (2.365)	2.836 (2.363)	2.646 (2.454)	2.413 (2.465)

Observations	817	817	817	817
# of company	364	364	364	364
Wald $\chi^2$	265.96	265.62	266.09	265.65
Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Industry and Location dummies are omitted for brevity.				

**Table 2. Digital Firm and Non-Digital Firm**

column 3 and column 4 present the moderating effects. The result in column 1 ( $\beta=0.758, p<0.05$ ) indicates a significant and positive relationship between EMPO and firm performance, meaning with employee-oriented sustainability practices in the online sustainability reports, firms can have better performance. This result supports H1a. Similarly, the result in column 2 ( $\beta=0.726, p<0.05$ ) suggests the significant and positive relationship between CUSO. In other words, a firm can gain better financial performance if it includes customer-oriented sustainability practices disclosure in the online sustainability reports, thus supporting H1b. The result regarding the impacts of the interaction of digital firm and EMPO in column 3 is not significant, thus, H2a is not supported. This suggests there is no significant difference between digital and non-digital firms on the relationship between employee-oriented sustainability practice disclosure through online sustainability platforms and firm performance. One potential reason is that the definitions of employee/labor in different firms are not consistent. Non-digital firms may consider all their employees while digital firms may not consider freelancers as their employees. The result of the interaction of digital firm and CUSO in column 4 is significant and positive ( $\beta=0.356, p<0.1$ ), indicating that compared to non-digital firms, digital firms can gain better firm performance when having customer-oriented sustainability practices disclosure in their online sustainability reports. This result support H2b.

## DISCUSSION

Online sustainability reporting platform provides a new avenue for companies to disclose their sustainability practices. According to the triple-bottom line, sustainability is not only about saving the planet (i.e., environmental sustainability), but it is also about caring for the people (i.e., social sustainability). For companies, they need to care for both internal stakeholders (such as their employees) and external stakeholders (such as their customers) to achieve social sustainability, leading to value creation in this process. Organizations also need IT strategies to cope with the digital transformation process. This study provides several theoretical implications. First, this study integrates research on online sustainability reporting (e.g., Taylor et al., 2018) with theory on the scope of operant resources (Beitelspacher et al., 2012) to deepen our understanding of IT for social sustainability. Second, this study highlights the two human-oriented indicators in the online sustainability reports, and thus contributes substantively to the IT for social sustainability literature. Third, the examination of the differences between digital firms and non-digital firms offers theoretical contributions to digital transformation research. The findings of this study also suggest important practical implications. This research suggests that companies need to improve the labor environment and provide better products to their customers. Furthermore, to address the gap with digital firms, the traditional non-digital firms may want to explore strategies to inform, empower, and engage their customers.

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