How IT Investments Help Hospitals Gain and Sustain Reputation in the Media: The Role of Signaling and Framing

Abstract

How can information technology (IT) help hospitals gain and sustain reputation in the media? Combining signaling theory and technology frames, we examine if, how, and to what extent IT investments over time shape three facets of reputation: *generalized favorability*, *being known*, and *being known for something*. In accessing healthcare services, most patients are unable to assess a hospital's quality of care directly. Faced with such information asymmetries, patients tend to consider a hospital's reputation in the media when making care decisions. Indeed, journalists are well positioned to detect even the weaker quality signals – among which are state-of-the-art IT – that a hospital emits. As information intermediaries, journalists aggregate and interpret IT-related signals against the backdrop of their technology frames, that reflect their expectations of how a modern hospital IT should look. Perceived congruence between their IT-related expectations and observations on the ground is likely to translate into less critical writing about a hospital. We test our theorizing based on a comprehensive panel dataset of 152 English hospital organizations spanning five consecutive years of IT investments and subsequent changes in media reputation as reflected in 175,973 articles in English newspapers. We find that investments in IT *staff* increase the "being known" facet of reputation as evidenced in the volume of media coverage. Investments in IT *equipment*, in contrast, positively affect a hospital's general favorability as mirrored in the tenor of its media coverage. Our econometric analysis as well as our complementary content analysis of newspaper articles and follow up interviews with journalists allow us to attribute this effect primarily to more visible IT equipment investments that prompt journalists to write less negatively about a hospital. These findings suggest that investments in IT equipment can buffer hospitals from negative press, thereby helping them to gain and maintain a strong reputation in the media.

Keywords*: Information Technology; IT Investment; IT Value; Reputation; Media; Signaling; Technology Frames, Healthcare, Hospital*

1 Introduction

An extensive body of knowledge on the business value of information technology (IT) has shed light on the conditions under which IT creates value, when value is manifested, and the mechanisms that mediate the IT–business value relationship (Kohli and Grover 2008). Scholars have made notable progress in explicating and measuring the operational and financial value dimensions of IT (Agarwal and Lucas Jr 2005, Kohli and Devaraj 2003, Kohli and Grover 2008, Melville et al. 2004). As a result, IT is now widely established as a pivotal organizational resource (Melville et al. 2004), one that offers opportunities for improvements in organizational productivity and competitive advantage in the digital age. Exploring whether IT generates competitive advantage by means other than increases in productivity and profitability, however, remains a nascent but stimulating research area that promises to identify new sources of IT value.

Authors of agenda-setting articles on IT payoff have therefore called for research that extends our understanding of IT value and explores other more intangible forms of IT value (Agarwal et al. 2010, Agarwal and Lucas Jr 2005, Kohli and Grover 2008). Research in general management is informative in this regard, as it highlights organizational reputation as an important form of social approval and as a critical intangible source of sustained competitive advantage that facilitates access to scarce resources such as customers, employees, suppliers, and investors (Fombrun and Shanley 1990, Lange et al. 2011). Management researchers have identified the media and individual journalists as important protagonists affecting the formation of organizational reputation (Pollock and Rindova 2003). The media act as social arbiter and infomediary that confer social value. By determining the content as well as the intensity and framing of coverage, journalists influence audiences such as investors (e.g., Pfarrer et al. 2010), the general public (e.g., Zavyalova et al. 2012), as well as potential and current customers. As such, the media may also serve as "*a reasonable indicator of the public's knowledge and opinions*" (Deephouse 2000, p. 1096) about organizations and as an indicator of organizational reputation at a particular point in time.

In this paper, we integrate the literatures on IT payoff and media reputation to examine the role that IT investments play in attaining and sustaining reputation as a form of social value. In so doing, our longitudinal study of hospital organizations aims to shed light on the following research questions: *Can IT*

investments help organizations attain and sustain reputation over time? Are investments in IT equipment, IT staff and IT services equally effective in building reputation? What are the causal mechanisms underlying the IT-reputation link?

We seek answers to these questions by combining two highly complementary lenses -- signaling theory (Spence 1973) and technology frames (Orlikowski and Gash 1994). Briefly, a signaling theory lens suggests that IT investments act as signals in that they convey information about an organization, thereby helping to reduce information asymmetries about an organization's quality (i.e., how well will this organization perform?) or behavioral intent (i.e., how will this organization act or react?) (Stiglitz 2000; Connelly et al. 2011). Under such conditions of information asymmetries, signals will be taken up by other parties such as journalists who function as dedicated information intermediaries and scrutinize the signals to better understand the relative merits of organizations. Technology frames, in turn, explain how such signals will be interpreted by the receiving party given their prior knowledge, assumptions, and expectations about technology in organizations. Technology frames therefore act as the cognitive background against which IT-related signals will be interpreted. Perceived congruence with prevailing frames will tend to trigger journalists to be less critical about an organization, while perceived incongruence might push journalists towards more investigative work. Jointly, signaling theory and technology frames can help explain the process whereby journalists attend to IT-related signals of an organization, interpret them, and incorporate them into their writing about the respective organization.

Adopting this complementary theoretical approach, we build a dynamic model that links increases in IT investments to subsequent increases in key facets of reputation as assessed by the general media. We then test our conceptual model using a panel of hospital organizations, for which reputation is a particularly critical source of competitive advantage (Baker and Taylor 1998, Makarem and Al-Amin 2014). The quality of care in a hospital is vital for patients, yet difficult to assess *ex ante* due to strong information asymmetries (Berry and Bendapudi 2007, Makarem and Al-Amin 2014). A hospital's reputation then serves as a useful heuristic for patients and referring physicians when selecting the most suitable service provider. Following seminal reputation studies (e.g., Bednar 2012, Deephouse 2000), we rely on extensive media data to capture

an organization's level of social approval. More precisely, we measure hospitals' media reputation using computational sentiment and content analysis of 175,973 articles that appeared in English newspapers and referred to one of the 152 English acute-care hospital organizations in our sample. We complement our econometric approach with in-depth qualitative interviews with journalists, newspaper editors, and hospital administrators in England and the US as well as content analyses of newspaper articles from our sample. This deep engagement with journalists' investigative practices in the specific hospital context allows us not only to triangulate and validate our quantitative findings, but also to better understand the process whereby journalists detect IT-related signals, interpret them against the backdrop of their technology frames, and translate them into newspaper articles about a hospital. As such, our qualitative work helps to provide evidence and shed further light on the causal mechanism that connects IT investments and subsequent changes in media reputation. This combination of quantitative and qualitative approaches allows for a granular insight into how IT investments shape organizational reputation in the media over time. In particular, we examine *whether*, *to what extent*, and *how* IT investments affect media reputation. We focus on three key facets of media reputation (Lange et al. 2011): (i) generalized favorability, i.e., the sentiment or tenor of media coverage, (ii) being known or generalized awareness, i.e., volume of media coverage, and (iii) being known for something, i.e., content of media coverage.

Regarding the question as to '*whether'* IT investments affect media reputation, we find that investments in IT equipment positively affect the tenor but not the volume and content of media coverage. Investments in IT staff, in contrast, increase the volume of media coverage. Regarding the *extent* of the reputation-enhancing effect of IT, we find that doubling the average amount invested in IT equipment is associated with a 2.9 percent improvement in media tenor. Finally, with respect to the *how*, our econometric analyses reveal that IT equipment investments trigger journalists to write less negatively rather than more positively about a hospital. This suggests that investments in IT equipment can buffer hospitals from negative press, thereby helping them to gain and maintain a strong reputation in the media. Our complementary qualitative analyses provide additional insights into the mechanisms involved. In particular, our qualitative findings show that higher IT investments tend to signal congruence with journalists'

technology frames and their expectations regarding state-of-the-art healthcare and modern hospitals – which is ultimately reflected in the less critical newspaper articles they write. At a broader level, this pattern of results might indicate that state-of-the-art IT has become a taken-for-granted element of contemporary health care facilities that organizations must signal to external stakeholders to preserve their reputation over time.

Overall, our findings provide granular insights into how distinct types of IT investments affect the three main facets of reputation. As such, our study contributes to a more holistic conceptualization of the multifaceted dimensions of IT value and responds to previous calls for broadening the scope of IT payoff (Agarwal et al. 2010, Agarwal and Lucas Jr 2005, Kohli and Grover 2008, Salge et al. 2015). Our findings will enable IT payoff scholars to view and assess, more expansively, the value of IT investments. These findings will also help practitioners to anticipate the reputational effects of IT investments and to use them strategically when making their business case. Next, we introduce our theorical background and hypotheses, and then turn to the methods and findings.

2 Theoretical Background and Hypotheses

2.1 Organizational Reputation and the Media

Fombrun (1996, p. 72) defined organizational reputation as "*a perceptual representation of a company's past actions and future prospects that describes the firm's overall appeal to all of its key constituents when compared with other leading rivals.*" An organization's reputation therefore reflects the (1) evaluative impressions of stakeholders, (2) how the organization might behave in the future ascribed from its past actions, and (3) compared to the competitive environment of the organization. Although researchers have defined reputation in several ways, there is growing convergence around these three characteristic elements of reputation (Walker 2010).

Especially under conditions of strong information asymmetry, such as unknown levels of quality or a risk of opportunistic behavior (Stiglitz 2000; Connelly et al. 2011), and high personal or economic stakes, external actors such as customers, suppliers or investors rely on organizational reputation as a form of social

judgement and an essential decision aid when comparing multiple organizations before engaging in economic exchange (Bitekine, 2011). These factors apply in particular – though not only – to healthcare, where patients typically lack the medical knowledge needed to assess the quality of healthcare services (i.e., are in a situation of information asymmetry), need to disclose their physical and/or mental state, and put their health and possibly even life on the line (i.e., have high personal stakes) (Berry and Bendapudi 2007, Fichman et al. 2011). Whenever possible, patients therefore tend to base their choice of healthcare provider not only on convenience and personal recommendations, but also on hospital reputation as portrayed in the media (Makarem and Al-Amin 2014). Reputation reduces the uncertainty patients and other stakeholders perceive in presence of information asymmetries in that it contains inferences about an organization's future actions based on its past actions (Rindova et al. 2005; Weigelt & Camerer, 1988). As a case in point, a hospital with a reputation for clinical excellence is expected to deliver excellence in future service interactions with patients.

Organizations actively release information to the wider public in order to enhance their reputation and to reduce the uncertainties and information asymmetries regarding, for example, quality of care external stakeholders might face (Basdeo et al. 2006; Zavyalova et al. 2012). This can be through annual reports, press releases, interviews, advertising, social media, the composition of the board of directors (Certo et al., 2001), or intellectual property (Warner et al., 2006). At the same time, various other actors including regulatory authorities, professional associations like certifiers, and consumer agencies provide evaluative information about organizations. This results in a wealth of reputational cues for any single organization that might differ in their visibility or clarity (Connelly et al., 2011; Warner et al., 2006). Such signals need to be identified, synthesized, and – especially for less clear or observable signals – interpreted in a process of socially constructing the public perception of the focal organization. The volume, diversity and potential ambiguity of these signals are likely to exceed individuals' limited time, attention, and information processing capacities. In such situations, boundedly rational decision-makers tend to rely on heuristics and mental shortcuts (e.g., Barnett, 2014; Brooks et al. 2013; Ravasi et al. 2018).

This is where specialized information intermediaries such as the media come into play (Bednar 2012; Rao 1997; Rindova et al. 2005). Given their superior ability to access, process, and interpret information, the media and journalists are ideally positioned to detect, interpret, and aggregate signals about organizations thereby helping to reduce information asymmetries (e.g., Rindova et al. 2005; Zavyalova et al. 2012). Journalists, especially those with a more investigative spirit, will draw on a wide set of sources including own site visits, interviews, and archival data to extract signals about an organization and its quality (or the lack thereof). As such, the media provide "*a forum of what constitutes a good firm*" (Deephouse 2000, p. 1097), and may thereby confer social value. This important role of the media in extracting and synthesizing signals becomes apparent, for instance, in individual newspaper articles portraying an organization and its actions in a particular way and is probably most visible in direct comparisons or rankings of organizations. The media play a crucial role in shaping external perceptions of organizations and forming their overall reputation among the public. External stakeholders of an organization such as (potential) customers thus "*infer reputations not only from signals sent by organizations, but also from the actions of influential third parties, such as news media, rating agencies, financial analysts, and certifiers*" (Ravasi et al. 2018, p. 579). In times of exponential information growth, external stakeholders are set to rely ever more strongly on information intermediaries such as the media and the picture they paint of organizations (Kjærgaard et al., 2011).

Organizational reputation as portrayed in the media and elsewhere is widely viewed as a multi-dimensional concept composed of three fundamental facets (Lange et al. 2011): reputation as *generalized favorability*, reputation as generalized awareness or *being known*, and reputation as *being known for something*. Studies referring to the conceptualization of *generalized favorability* place particular emphasis on the evaluative characteristic of reputation and an organization's "*overall appeal.*" Here, the organization is assessed on dimensions such as being good vs. bad or attractive vs. unattractive (Boyd et al. 2010, Deephouse and Carter 2005, Love and Kraatz 2009). The assumption is that the perceiver draws on "*diffuse and ambiguous*" signals and forms an overall impression of the organization (Fischer and Reuber 2007, p. 57, Fombrun and Shanley 1990). As Lange et al. (2011) state, *generalized favorability* lines up with the

tenor of media coverage portraying an organization as "good" or "bad." *Being known*, in contrast, refers to the size of the public audience that is aware of an organization irrespective of specific judgments or evaluations (Lange et al. 2011, Rindova et al. 2005, Scott and Walsham 2005). This conceptualization of reputation emphasizes the degree of familiarity with the organization. Finally, *being known for something*, refers to specific organizational attribute that is of special interest to the respective stakeholder group (Basdeo et al. 2006, Fischer and Reuber 2007, Love and Kraatz 2009, Rindova et al. 2005). For example, an organization may have a reputation for offering highly reliable products or, in a healthcare setting, for providing high quality care.

2.2 Explicating Media Reputation by Combining Signaling Theory and Technology Frames

We argue that reputation as being shaped by IT and technology more broadly can be best understood by combining signaling theory (Spence 1973) and technology frames (Orlikowski and Gash 1994).

Signaling is widely established as a strategy to address ex-ante information asymmetries that exist between two or more parties before a transaction is conducted (Connelly et al. 2011, Spence 2002). As Siglitz (2000) argues, information asymmetries in the organizational realm pertain predominantly to the two organizational characteristics of quality and behavioral intent. In IS research, Ho and Rai (2017), found that open-source software leaders implement quality controls, referred to as accreditation and code acceptance, to signal unobservable input and output quality to volunteers and ensure their continued participation. Simply put, one party seeks to provide credible evidence in support of some attribute considered desirable, but not directly observable by the other party in view of reducing perceived uncertainty and transaction costs. To signal its quality of care, a hospital could, for example, publish the biographies of its most renown medical experts on its website or, indeed, showcase its state-of-the-art IT and IT-enabled technology in areas such as medical imaging or robotic surgery. Importantly, these signals differ in core attributes, including their visibility, their frequency and consistency, and their fit (Connelly et al. 2011). Visibility refers to whether external perceivers can notice the signal. Arguably, less visible signals are less effective in reducing information asymmetries. Signal frequency, in turn, refers to the number of signals that are received. When multiple signals with the same content are received from the

same source, signals are considered consistent. Finally, signal fit increases with the strength of the correlation between the signal and the aspect that the signal receiver seeks to understand or evaluate. Moreover, signals do not need to be observed directly by the receiver. Instead, they can also be conveyed – individually or in combination with other signals – through interpersonal networks or through information intermediaries such as the media (Deephouse and Carter 2005, Pollock and Rindova 2003).

Journalists and the media are well positioned to detect, interpret, and aggregate the wealth of more or less visible IT- and non-IT-related signals, many of which might otherwise remain unnoticed. Through hospital visits, stakeholder interviews, press releases and other sources, journalists will also be likely to learn about hospitals' IT investments as reflected in visible IT equipment, the IT qualifications of staff members, or specific IT services – and the broader technologies (e.g., medical imaging devices, electronic patient records, surgical robots) and services (e.g., more accurate diagnostics, efficient information storage and transfer, minimally invasive survey) they afford. Jointly, these impressions will shape journalists' perception of a hospital, their writing about it – and ultimately the reputation of a hospital in the media.

Technology frames as a complementary theoretical lens can be used with signaling theory to understand more fully how and why journalists attend to and interpret IT-related signals. Technology frames encompass the set of "assumptions, expectations, and knowledge [used] to understand technology in organizations" (Orlikowski and Gash, p. 178). Technology frames inform and underlie individual and collective perceptions of technology. They encapsulate individuals' previous experiences with technology and shape present ways of thinking and acting (Cornelissen and Werner 2014, Davidson 2006). Technology frames are closely interconnected with wider field-level discourses, thereby attributing meaning to technology (Barrett et al. 2013). In the English National Health Service (NHS), for instance, technology frames regarding IT were shaped during much of the 2000s by a strong modernization discourse that presented technology and innovation as essential means to ensure state-of-the-art healthcare and move hospitals into the 21st century (Farchi and Salge 2017). At the time, several policy reports and government communications were issued that promoted technology investment as an essential prerequisite for a modern and effective NHS able to deliver first class services (Audit Commission 2004; Secretary of State 1997;

1998). This modernization discourse became highly salient in the entire country and featured regularly in the mass media. This had important implications for the then prevailing technology frames, which centered on IT as the key enabler of state-of-the-art healthcare and a modern hospital.

We argue that journalists' technology frames will shape how they take up and interpret IT-related signals and translate them into their writing about a hospital. More specifically, journalists' technology frames will shape their expectations about how a modern hospital should look like in terms of IT and its wider affordances. Informed by their technology frames, journalists will hence tend to search for – and attend to – signals of (in)congruence with these expectations and their mental model of a modern hospital. Consider the example of a journalist investigating differences in care between non-specialist and specialist hospitals. During her visit to a smaller, general hospital, she notices stacks of paper records rather than fully electronic patient records. Moreover, patients inform her that, from time to time, clinical notes cannot be located and sometimes a physician does not have all information needed during a consultation. The journalist then visits a recently built hospital specialized on cancer treatment. Here, technology is omnipresent and presented to the journalist during the launch event. All information is stored in electronic patient records and available to all doctors and nurses, who can access data and order tests through their mobile devices. Clearly, the specialist cancer hospital signals greater congruence with the journalist's technology frame and her expectations of state-of-the-art healthcare and a modern hospital. In her final article for a regional newspaper, she hence portrays the specialist hospital in a notably more positive light than the general hospital, possibly writing less about the IT itself than its overall impact on patient care.

2.3 The Dynamic Relationship between IT Investments and Media Reputation

Jointly, the arguments from signaling theory and technology frames presented above suggest that an organization's IT investments may enhance its reputation in the media via two related, but conceptually distinct causal mechanisms. First, increases in investment in IT equipment, services, and staff – and their more visible manifestations – may signal greater information processing and decision-making capabilities to journalists, with positive implications for their quality perceptions and their writing. Second, when

congruent with journalists' prevailing technology frames and resulting expectations, IT-related signals may be seen as evidence of a higher general "fitness" of the organization.

Some IT systems are implemented to support a specific process, others enable information exchange, coordination, and cooperation across processes (Basu and Blanning 2003). In healthcare, picture archiving and communication systems (PACS) are an example of specialized IT that supports mainly radiologists. Electronic health records as overarching systems enable the distribution of information and coordination of care within a hospital and beyond. Journalists rely on such IT-related signals when forming an opinion about a hospital. As Feldman and March (1981, p. 171) noted, "using information, asking information, and justifying decisions in terms of information have all come to be significant ways in which we symbolize that the process is legitimate, that we are good decision makers, and that our organizations are well managed." As a result, "reputations for organizational intelligence are built on capabilities for securing, analyzing, and retrieving information in a timely and intelligent manner."

Consistent with this logic and the expected reputation-enhancing effect of IT, Menon and Kohli (2013) found that investing in IT leads healthcare insurance companies to reduce their malpractice insurance premiums due to expected improvements in care. More generally, prior IS research has emphasized that IT performance outcomes encompass intangible dimensions (Bharadwaj 2000, Salge et al. 2015). IT managers, for instance, were found to achieve positive external perceptions to promote value of IT in the organization (Lim et al. 2011, 2013). Initial evidence also suggests that organizations attain reputation when they are among the first to adopt fashionable IT-enabled innovations, among them data warehousing, business process reengineering, and enterprise resource planning (Wang 2010).

Given the initial evidence available and the theoretical arguments derived from signaling theory and technology frames, we propose that increases in IT investment are associated with subsequent increases in all three facets of media reputation. Thus:

Hypothesis 1. *Increases in a hospital's investments in IT equipment, services, and staff will be positively related to changes in its media reputation as reflected in its generalized favorability, being known, and being known for something.*

We provide further granularity to our theorizing and argue that the reputation-enhancing effect of IT-related signals is likely to vary across the three facets of reputation (*generalized favorability, being known, being known for something)*. For this purpose, it is important to recall that signals differ in core attributes including their visibility, their frequency and consistency, and their fit (Connelly et al. 2011). Similarly, the three facets of reputation differ in their focus, their determinants, and their susceptibility to the two causal mechanisms expected to link IT investments and media reputation set out above: that is IT investments serving as (1) signal for superior information processing and decision-making capabilities and (2) prerequisite for perceived congruence with prevailing technology frames and expectations of state-of-the-art healthcare and a modern hospital.

Generalized favorability pertains to an organization's overall appeal in the media, with journalists evaluating the organization on some aggregate characteristic such as being good or bad or being modern or outdated, based on a set of often diffuse and ambiguous signals (Boyd et al. 2010, Deephouse and Carter 2005, Love and Kraatz 2009). Even though not always easily visible to journalists, IT-related signals including IT investments and their affordances exhibit a strong fit with aggregate characteristics such as being modern or outdated. Indeed, journalists will interpret IT against the backdrop of their technology frames and will tend to equate the presence of IT with a general "fitness" of the hospital as an adequate provider of high-quality care. Especially in light of the modernization discourse in healthcare, we expect IT-related signals to be particularly salient in shaping a hospital's overall appeal in the media.

In contrast, we expect the reputation-enhancing effect of IT to be somewhat smaller with regards to both *being known* as general awareness or prominence of an organization in the media and *being known for something* as relative salience of a specific organizational attribute in the media (e.g., include quality of care, patient experience, or research excellence). Both facets of reputation are fueled primarily by highly visible signals that are emitted frequently and consistently. These include corporate marketing and branding campaigns, affiliations with prominent partners, and publicity gained from third parties (Deephouse 2000, Lange et al. 2011, Rindova et al. 2005). In comparison, IT-related signals tend to be less visible, less frequent, and less consistent. Moreover, being known (for something) often evolves irrespective of specific

judgements or evaluations (Lange et al. 2011, Rindova et al. 2005, Scott and Walsham 2005). As a result, superior information processing capabilities or IT per se are unlikely to be a direct source of being known (for something), even though congruence with prevailing technology frames and cognitive templates of a modern hospital might well attract additional media attention. Overall, we hence expect a positive, yet more limited effect of IT investments on the being known and the being known for something facets of media reputation. We hence propose:

> ***Hypothesis 2.*** *The positive effect of increases in investments in IT equipment, services, and staff on increases in a hospital's media reputation will be stronger for generalized favorability than for being known and being known for something.*

As an additional layer in our theorizing, we decompose media reputation into its constitutive positive ("good press") and negative components ("bad press"), which might be shaped differently by IT investments and their more visible manifestations. More specifically, we argue that IT investments will more likely serve as a buffer against negative evaluations than as an amplifier of positive evaluations. This implies that IT-related signals received from an organization will trigger journalists to write less negatively rather than more positively about it. As Feldman and March (1981) argued, IT investments signal not only superior information processing capabilities, but also effective processes and good management more generally. As such, IT-related signals establish a "credit of trust" among journalists and other stakeholders. The higher this credit of trust, the less critical journalists will tend to be in their assessment of organizational practices and outcomes.

Moreover, given the omnipresent discourses of modernization and digital transformation in healthcare, IT systems such as electronic health records, medical-imaging systems, and picture-archiving systems have become taken for granted. In this digital age, IT is a part of our mental model of what a hospital ought to be. As an integral part of our technology frames, IT is inexorably linked with our conception of state-of-the-art healthcare and a modern hospital. This creates high – and continuously increasing – baseline expectations among journalists and other stakeholders regarding the amount and sophistication of IT investments. This reasoning is broadly consistent with signaling theory suggesting that the value of a signal diminishes when the number of signals increases over time (Connelly et al. 2011).

Indeed, journalists might be more likely to note lacking or outdated IT than the presence of modern IT. To truly stand out and exceed the rapidly growing IT-related expectations of journalists and other stakeholders, a hospital would need to go the extra mile and seek, for instance, to become a full-fledged smart hospital. For most standard hospitals, however, the reputational downside risk of inadequate IT will be notably more pronounced than the reputational upside potential of modern IT.

Overall, IT investments will hence help hospitals gain and sustain a strong reputation in the media, primarily by serving as a reputation buffer that protects them against negative evaluations being formed in the first place. This effect might be further amplified by the media serving as a watchdog, thereby emphasizing adverse events and incongruence with expectations (Bednar 2012, Pollock et al. 2008). Thus:

> ***Hypothesis 3.*** *The positive effect of increases in investments in IT equipment, services, and staff on increases in a hospital's media reputation will unfold by attenuating negative evaluations rather than fostering positive evaluations.*

3 METHODS

3.1 Sample

We tested our conceptual model using multi-source longitudinal data from public hospital organizations in England. Healthcare is a suitable field for examining the link between IT and reputation given both the prevalence of IT and the strategic importance of reputation to attract patients, talent and funding (Ruef and Scott 1998). To test our hypotheses, we relied on a panel dataset that was composed of all non-specialist public hospital organizations in England. These hospitals operate under the umbrella of the National Health Service (NHS). The NHS was founded in 1948 and is funded by taxation. It is the largest public health service in the world and provides free health care for every resident in England. Our analyses are based on all multi-specialty acute care hospitals in the English NHS. Each organization, called a trust, is a legally and fiscally independent entity with its own governance board. Each trust typically manages multiple hospital sites in a geographical region. The specific setting within the English NHS allowed us to explain differences in media reputation and minimize the distorting effects arising from differences in ownership, health care policies, and other sources of unobserved heterogeneity. We compiled the panel dataset by integrating archival, survey and media data on 152 NHS hospital organizations from

multiple sources including the Department of Health, the Care Quality Commission, the LexisNexis media database, and the individual NHS trusts. This dataset covered the six-year period from April 2002 to March 2007 – a period, where the discourse of modernization was particularly salient in the NHS. As we lagged all IT variables by one year and had missing data in 10 organization-year observations, all our analyses were performed on an unbalanced panel of 750 organization-year observations.

We complemented our econometric analyses with qualitative analyses of rich data from 15 in-depth interviews with journalists, newspaper editors and hospital administrators in England and the US as well as extensive text mining and manual analyses of the content of newspaper articles covering the hospitals in our sample. We conducted this qualitative work with two primary objectives in mind: First, we sought to better understand the key findings from our quantitative analyses by discussing the relationship between hospitals' IT investments and media reputation with the protagonists of our theorizing: healthcare journalists themselves. Second, we hoped to gain deeper insights into the causal mechanisms that connect IT investments and media reputation by examining more directly journalists' investigative practices, their technology frames, and their writing outcomes. Overall, this unique combination of quantitative techniques supplemented with qualitative evidence provides richer, more granular insights into the relationship between IT investments and media reputation.

3.2 Measurement

3.2.1 Media Reputation

We followed prior research in using print media data to measure an organization's media reputation (e.g., Bednar 2012, Deephouse 2000, Pollock and Rindova 2003, Zavyalova et al. 2012). Due to our focus on the English NHS, we restricted our search to all English newspapers. To identify newspaper articles covering the hospital organizations in our sample, we searched the LexisNexis database using 883 search terms including the names of each trust and of all hospitals operated by that trust. We extracted the full text of all articles that mentioned at least one of our search terms and were published between April 2002 and March 2007. We excluded articles that referred to more than one trust and those that contained fewer than 50 words (Bednar 2012). Applying these criteria, we drew on 175,973 English newspaper articles to

measure media reputation. The mean number of articles per trust and year was 206.18 with a standard deviation of 246.94, indicating the considerable interorganizational variance in media attention.

Generalized Favorability. To operationalize *generalized favorability*, we conducted a computer-assisted content analysis of all full-text newspaper articles extracted using the well-known Language Inquiry Word Count (LIWC) software. This allowed us to identify positively and negatively connoted emotional words in each of the 175,973 full-text newspaper articles using pre-defined vocabularies (Pennebaker et al. 2001).[1] Following prior reputation research using LIWC (e.g. Bednar 2012, Pfarrer et al. 2010, Zavyalova et al. 2012), we calculated the percentage of positive and negative terms in relation to the total word count of a particular article to measure *Positive* and *Negative Media Tenor*. We then calculated the means of the percentages across all articles for a given trust and year (Bednar 2012).[2] The final *Media Tenor* coefficient reflecting generalized favorability was calculated according to the following formula by dividing the mean of positive percentages for a trust and year by the mean of negative percentages.[3]

$$Media\ Tenor_{t,y} = Positive\ Media\ Tenor_{t,y} \Big/ Negative\ Media\ Tenor_{t,y}$$

$$\Leftrightarrow Media\ Tenor_{t,y} = \frac{\frac{\sum_{i=1}^{a}\left(\frac{\sum PW_{t,y,a}}{WC_{t,y,a}}\right)}{N_{t,y}}}{\frac{\sum_{i=1}^{a}\left(\frac{\sum NW_{t,y,a}}{WC_{t,y,a}}\right)}{N_{t,y}}}$$

t = trust index
y = year index
a = article index
PW = positive words
NW = negative words
WC = Word count
N = number of articles

Being Known. To operationalize the *being known* facet of reputation, we computed a count of the number of articles that mention a given trust in each year. The corresponding variable is called *Media Coverage*.

Being Known for Something. To capture *being known for something*, we focused on hospitals' reputation for quality and developed a dictionary to detect quality-related content in the full-text newspaper articles

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[1] A detailed description of LIWC and its external validity can be found on the following website: http://www.liwc.net/howliwcworks.php. According to the LIWC authors, the two categories of positively and negatively connoted words possess internal reliability (Cronbach Alpha) of .97 (http://www.liwc.net/descriptiontable1.php).

[2] As Deephouse (2000) puts it, the aggregation of media data to an annual measure is of advantage because it attenuates short-term temporal dynamics of public opinion.

[3] Prior research has often coded articles as positive, neutral, or negative and integrated this coding into a Janis-Fadner coefficient (Deephouse 2000, Deephouse and Carter 2005, Pollock and Rindova 2003). However, these measures do not account for articles that contain both positive and negative statements (Bednar 2012). In addition, these measures do not distinguish between the extent of media coverage (being known) and the tenor of coverage (generalized favorability).

using LIWC. The dictionary was developed in four steps: First, we downloaded the full text of all quality-related articles available in the English Wikipedia. We converted each article into a text file. Second, we identified n-grams that represent a continuous sequence of *n* items, in the downloaded text files. In English, words generate a specific meaning due to their sequential order. For example, "total quality management" and "ISO standard" generate meaning as a compound, which is defined as an n-gram. Before analyzing the quality-related Wikipedia texts, we therefore replaced single words with n-grams by applying Wang et al.'s (2007) algorithm. After excluding stop-words such as "is" and "it," we compiled a list of 1,240 words and n-grams on quality that appeared in Wikipedia articles. Third, following standard procedures from computer-science and text-mining research (Wu et al. 2008), we computed the "term frequency–inverse document frequency" (tf-idf) value for each term to determine its discriminatory power. The tf-idf is highest when a term occurs frequently in a small number of documents and lowest when the term occurs in virtually all documents. We ranked all quality-related terms according to their tf-idf value to inform the subsequent manual part of the dictionary preparation. Finally, two members of the author team examined the ranked term list to select terms with high discriminatory power and close connection to the construct of quality. This resulted in a dictionary of 74 terms and n-grams on core aspects of quality that we entered into LIWC. Similar to other content analysis studies (Bednar 2012, Bermiss et al. 2013), we calculated the percentage of all words of a given newspaper article that related to our dictionary. The variable *Content of Media Coverage*, then, reflects the average percentage of quality-related coverage per hospital trust in that year.

3.2.2 Independent Variables.

Our data include three IT investment measures that cover major categories of organizational IT spending (Brynjolfsson and Hitt 1996, Dewan et al. 2007, Ho et al. 2011). In line with extant literature, we divided each organization's IT investments by its total revenues (Aral and Weill 2007, Ho et al. 2011, Salge et al. 2015). We measured *IT Equipment Intensity* (e.g. hardware and software for servers, desktops and data communication), *IT Services Intensity* (e.g., maintenance, licensing and rental/leasing of hardware and software and all external IT-related services), and *IT Staff Intensity* (e.g. head of IT, internal IT and information management staff). We summarized other types of investment under *IT Other Intensity*. As the

effects of investments in resources, such as IT, usually materialize with delay (Kohli and Devaraj 2003, Tam 1998), we lagged all IT investment variables by one year.[4]

3.2.3 Control Variables.

As evident from our theorizing, reputation is likely to be shaped by a number of factors other than IT investments. We therefore controlled for a number of potentially confounding variables. First, we explicitly controlled for differences in hospital efficiency by including the *Inpatient Length of Stay,* that is the average length of stay (in days) of patients in the respective hospital (e.g., Devaraj and Kohli 2000, Singh and Terwiesch 2011). Second, we also controlled for differences in hospital effectiveness as reflected in a hospital's risk-adjusted *Inpatient Mortality*. We relied on data from the independent English monitoring organization called Dr. Foster, which calculates mortality ratios after adjusting for a hospital's patient mix. Standardized mortality is widely used as a quality measure in health economics (Cavalieri et al. 2013, Geweke et al. 2003) and in medical research (WHO 2004). Importantly, accounting for both hospital efficiency and effectiveness enabled us to isolate the *direct* reputation effect of IT on media reputation after accounting for indirect effects via IT-induced changes in hospital efficiency and effectiveness.

Third, to account for other organizational influences, we included *Organizational Size* measured by the number of full time equivalent (FTE) employees. The rationale was that bigger health care organizations might attract more public attention and media coverage. Moreover, as the demand for information increases with organizational size, the potential of an organization's IT infrastructure also increases. Fourth, we controlled for *Work Load*, as higher patient throughput might have implications for IT investment and quality of care (Breidbach et al. 2016). This, in turn, might shape public perceptions of the hospital organization signaling low patient-contact times. We measured *Work Load* as the number of admissions per FTE. Fifth, we included a *Severity of Illness Index*, which was measured as the share of admitted patients statistically expected to pass away during their hospital stay given their primary diagnosis, comorbidities

[4] In order to determine the optimal time lag, we computed all models with different time lags and inspected the Akaike and the Bayesian information criteria of the models. This indicated the superiority of using a time lag of one year.

and socio-economic characteristics. The rationale was that hospitals that treat patients with more severe illnesses might need advanced IT and therefore attract greater media attention. Sixth, and in line with the aforementioned argument, we also included the *Intensive Care Ratio* measured by the percentage of beds exclusively used for intensive care. Seventh, we controlled for *Financial Slack,* as financial capacities might be associated with both IT investment and reputation (Brammer and Pavelin 2006, Deephouse and Carter 2005). Eighth, we controlled for *Foundation Trust Status*, which the NHS awards for good management and care practice and which comes with greater legal and financial independence from regulatory authorities. Ninth, we accounted for *Population Health Status*, which is assessed by the age-standardized mortality ratio in the English region in which the hospital is located. Finally, we controlled for the *Lagged Dependent Variable* and a *Time Trend* to account for temporal effects and unobserved changes in the organizational environment.

4 Analysis and Results

4.1 Results from Descriptive Analyses

In Table 1, we present descriptive statistics and pairwise correlations. Four findings appear particularly noteworthy. First, as reflected by the sum of the four IT investment variables for equipment, services, staff, and other investments, during our observation period, English hospital trusts invested on average less than 2% of their annual revenues in IT. IT investments also exhibited considerable inter-organizational variation. Second, the NHS hospital organizations we studied received considerable media coverage with a mean of 206.18 articles per year and hospital trust. It is particularly noteworthy that the media coverage varies from one to 1,834 newspaper articles per year. Third, the media portray hospital organizations in a rather positive light, which is reflected by a mean media tenor value above 1. Interestingly, the media tenor has a rather large range from 0.17 to 7.37. This indicates that the media portray some hospitals in a strongly negative or strongly positive way. Fourth, on average, 0.71% of all words in the newspaper articles refer to quality, with a range from zero to above 2%.

Table 1: Descriptive Statistics and Pairwise Correlations

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.
1. Tenor of Media Coverage	1.0000																		
2. Positive Media Tenor	0.8055	1.0000																	
3. Negative Media Tenor	-0.8200	-0.6526	1.0000																
4. Volume of Media Coverage	-0.1498	-0.0744	0.0465	1.0000															
5. Content of Media Coverage	0.1237	0.1869	-0.0805	-0.1398	1.0000														
6. Inpatient Length of Stay	0.0785	0.1158	-0.0751	-0.0363	-0.0045	1.0000													
7. Inpatient Mortality	-0.0037	0.0386	0.0446	-0.1263	-0.0269	0.1632	1.0000												
8. Organizational Size	-0.0903	-0.0768	0.0771	0.4662	-0.1061	0.0591	-0.2503	1.0000											
9. Work Load	-0.0216	-0.0346	-0.0009	-0.1821	-0.0432	-0.5525	0.1971	-0.3697	1.0000										
10. Severity of Illness Index	0.0743	0.1053	-0.0650	-0.1138	-0.0524	0.3434	0.1545	-0.3590	-0.1141	1.0000									
11. Intensive Care Ratio	-0.0222	-0.0375	0.0765	0.1112	-0.0367	-0.1789	-0.1764	0.2026	-0.1148	-0.2872	1.0000								
12. Financial Slack	0.0006	-0.0190	-0.0046	0.0350	0.0163	-0.1317	-0.1430	-0.0090	0.0845	-0.1241	0.0349	1.0000							
13. Foundation Trust Status	0.0294	0.0016	-0.0210	0.0295	-0.0663	-0.0998	-0.1497	0.0611	0.0254	-0.1710	0.0654	0.5694	1.0000						
14. Population Health	-0.0185	-0.0095	0.0318	0.1293	-0.1284	0.3619	0.2695	0.1193	-0.1738	0.1745	-0.1936	-0.1447	-0.0854	1.0000					
15. Time Trend	-0.0292	-0.0275	0.0158	0.1721	0.0899	-0.4683	-0.3214	0.0246	0.1984	-0.2809	0.1660	0.3730	0.3234	-0.5495	1.0000				
16. IT Equipment Intensity (lagged)	0.0264	0.0137	-0.0297	-0.0719	-0.0611	0.0779	0.0688	-0.0739	-0.0552	0.0313	-0.0464	-0.0920	-0.0941	0.1076	-0.1623	1.0000			
17. IT Services Intensity (lagged)	0.0041	0.0479	0.0122	-0.1908	0.0160	-0.0583	0.1298	-0.3178	0.1483	0.2132	-0.1349	0.0480	-0.0489	-0.0963	0.0145	0.1466	1.0000		
18. IT Staff Intensity (lagged)	0.0830	0.0440	-0.0514	-0.0646	0.0203	-0.1220	0.0509	-0.2681	0.0973	0.0598	-0.0176	0.0280	-0.0129	-0.0093	0.1020	-0.0022	0.1171	1.0000	
19. IT Other Intensity (lagged)	-0.0302	-0.0163	-0.0367	0.1243	-0.0640	-0.1277	-0.0522	-0.0728	0.1017	0.0325	-0.0644	-0.0003	-0.0236	-0.0846	0.1539	-0.0499	-0.0176	0.1682	1.0000
Mean	1.27	2.41	2.13	206.18	0.71	5.10	97.76	3817.16	21.04	5.95	4.03	0.19	0.20	113.04	3.01	0.18	0.60	0.80	0.30
Standard Deviation	0.73	0.59	0.48	246.94	0.23	0.93	12.64	1977.90	3.85	1.18	2.21	0.42	0.40	10.14	1.41	0.20	0.31	0.31	0.29
Minimum	0.17	0.53	0.44	1.00	0.00	2.70	57.85	1248.26	0.57	2.64	0.00	-0.02	0.00	95.47	1.00	0.00	0.00	0.00	0.00
Maximum	7.37	4.76	4.76	1834.00	2.04	12.80	144.40	13772.45	32.76	9.79	27.72	7.37	1.00	137.43	5.00	1.99	2.24	2.31	3.98

Notes: N = 750 (152 organizations over five years - April 2002 to March 2007). Values above .0743 and below -.0739 are all significant at the .05 level.

4.2 Results from Regression Analyses

We tested our hypotheses using fixed effects panel regression models with robust standard errors given the nature of our research question and results from the Hausman test (Hausman 1978). Fixed effects estimators exploit within-subject variation (i.e., within each hospital organization) over time at the expense of ignoring between-subject variation (i.e., between different hospital organizations) at one point in time. This approach accounts for time-invariant unobserved heterogeneity and is well-suited for explaining changes in outcome variables over time. Fixed effects models have therefore been used in a number of IS studies that draw on panel data and typically offer more conservative results (e.g., Han and Mithas 2013).

We present our results in Table 2. Model 1 serves as the baseline model and includes all control variables, including core determinants of changes in media reputation such as hospital efficiency (Inpatient Mortality) and effectiveness (Inpatient Length of Stay). Hypothesis 1 predicted that increases in IT investments are positively associated with increases in media reputation, using its three reputation facets of *Tenor of Media Coverage* (generalized favorability), *Volume of Media Coverage* (being known), and *Content of Media Coverage* (being known for something). Models 2, 4 and 6 test this relationship for the different facets. Across all models, we found some evidence to support our predictions.

Table 2: Results from Fixed Effects Panel Regressions

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
	Reputation Concept	*Tenor of Media Coverage*	*Tenor of Media Coverage*	*Volume of Media Coverage*	*Volume of Media Coverage*	*Content of Media Coverage*	*Content of Media Coverage*	*Positive Media Tenor*	*Positive Media Tenor*	*Negative Media Tenor*	*Negative Media Tenor*
1	Constant	-1.2333	-1.1938	-1363.47 ***	-1452.27 ***	1.6472 +	1.6426 +	3.1611 *	3.0916 +	5.1119 ***	5.1259 ***
		(2.3146)	(2.3136)	(329.6039)	(338.0204)	(0.8437)	(0.8385)	(1.5919)	(1.6014)	(1.2665)	(1.2708)
Control Variables											
2	Lagged Dependent Variable	-0.1823 **	-0.1809 **	0.4725 ***	0.4733 **	-0.1048 *	-0.1079 **	-0.1375 ***	-0.1389 ***	-0.1743 **	-0.1751 **
		(0.0585)	(0.0575)	(0.1337)	(0.1415)	(0.0418)	(0.0413)	(0.0405)	(0.0409)	(0.0644)	(0.0646)
3	Inpatient Length of Stay	0.1416 +	0.1532 *	9.6579	6.3357	0.0103	0.0055	-0.0039	-0.0051	-0.0879	-0.0946 +
		(0.0772)	(0.0769)	(10.8040)	(11.6206)	(0.0275)	(0.0274)	(0.0410)	(0.0432)	(0.0568)	(0.0571)
4	Inpatient Mortality	-0.0122 *	-0.0122 *	-0.9834	-0.8367	0.0010	0.0010	-0.0043	-0.0041	0.0074 **	0.0075 **
		(0.0047)	(0.0048)	(0.6619)	(0.6824)	(0.0013)	(0.0013)	(0.0028)	(0.0029)	(0.0028)	(0.0028)
5	Organizational Size	0.0005 **	0.0006 **	-0.0586 *	-0.0616 *	-0.0001	-0.0001	0.0002 *	0.0002 *	-0.0002 **	-0.0003 **
		(0.0002)	(0.0002)	(0.0255)	(0.0261)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
6	Work Load	0.0277	0.028	1.2748	1.4636	-0.0068	-0.0074	-0.0001	-0.0001	-0.0151	-0.0163
		(0.0188)	(0.0184)	(3.7748)	(3.7564)	(0.0089)	(0.0090)	(0.0133)	(0.0135)	(0.0129)	(0.0127)
7	Severity of Illness Index	-0.0141	-0.0152	-7.8662	-6.958	-0.0200	-0.0199	0.0203	0.0205	-0.0178	-0.0190
		(0.0747)	(0.0746)	(10.1460)	(10.1277)	(0.0237)	(0.0236)	(0.0426)	(0.0428)	(0.0485)	(0.0484)
8	Intensive Care Ratio	-0.0474 +	-0.0472 +	2.2381	1.5134	-0.0059	-0.0059	-0.0195 *	-0.0202 *	0.0280 *	0.0281 *
		(0.0251)	(0.0255)	(3.0217)	(3.0665)	(0.0065)	(0.0065)	(0.0098)	(0.0099)	(0.0115)	(0.0118)
9	Financial Slack	0.0054	0.0072	4.7949	4.6891	0.0493 *	0.0482 *	-0.0031	-0.0015	0.0082	0.0109
		(0.0668)	(0.0661)	(10.3819)	(10.6073)	(0.0206)	(0.0206)	(0.0528)	(0.0544)	(0.0300)	(0.0266)
10	Foundation Trust Status	0.0202	0.0165	-3.7739	-3.4464	-0.0401	-0.0431	-0.0418	-0.0417	-0.0811	-0.0823
		(0.1196)	(0.1195)	(16.2665)	(16.5115)	(0.0299)	(0.0305)	(0.0792)	(0.0793)	(0.0710)	(0.0699)
11	Population Health	0.0073	0.0058	13.5673 ***	14.0663 ***	-0.0045	-0.0035	-0.0066	-0.0067	-0.0133	-0.0128
		(0.0137)	(0.0143)	(2.7068)	(2.8808)	(0.0050)	(0.0050)	(0.0102)	(0.0106)	(0.0085)	(0.0088)
12	Time Trend	-0.0060	-0.0019	77.9895 ***	78.3605 ***	0.0043	0.0073	-0.0393	-0.0409	-0.0417	-0.0476
		(0.0718)	(0.0740)	(12.5500)	(13.4323)	(0.0245)	(0.0245)	(0.0460)	(0.0479)	(0.0375)	(0.0381)
Main Effects											
13	IT Equipment Intensity (lagged)		0.2041 *		-22.2402		-0.0621		-0.0051		-0.1642 **
			(0.0936)		(16.8777)		(0.0383)		(0.0890)		(0.0560)
14	IT Services Intensity (lagged)		0.0434		13.7847		-0.0205		0.0689		0.1052
			(0.0997)		(19.0921)		(0.0520)		(0.0918)		(0.0900)
15	IT Staff Intensity (lagged)		-0.0188		46.4340 *		-0.0217		0.0639		0.0365
			(0.0880)		(19.5098)		(0.0391)		(0.0759)		(0.0756)
16	IT Other Intensity (lagged)		-0.0764		-8.6888		-0.0158		-0.0095		0.0427
			(0.0856)		(23.1145)		(0.0306)		(0.0678)		(0.0598)
Hospital Trusts		152	152	152	152	152	152	152	152	152	152
Years (min)		2	2	2	2	2	2	2	2	2	2
Year (max)		5	5	5	5	5	5	5	5	5	5
Trust-Year Observations		750	750	750	750	750	750	750	750	750	750
R-Squared (within)		0.0823	0.0875	0.3034	0.3099	0.0452	0.0499	0.038	0.04	0.0803	0.0888
F		2.2079 *	1.7457 *	9.6864 ***	7.7139 ***	2.3121 *	2.2254 **	2.6216 **	1.9759 *	2.9567 **	2.9962 ***

Notes. Unstandardized efficient estimates reported. Robust standard errors reported in parentheses.
**** p < .001; ** p < .01; * p <.05; + p <.10*

Increases in *IT Equipment Intensity* are related to subsequent improvements in media reputation as mirrored in the *Tenor of Media Coverage* in Model 2 (b = .2401, p < .05). To determine the effect size, we calculated the elasticity of *IT Equipment Intensity* using the estimated coefficients. The elasticity was .029, indicating that doubling the *IT Equipment Intensity* — that is, spending on average 0.36% of the total income instead of 0.18% — will be associated with a 2.9% increase in the *Tenor of Media Coverage*.[5]

[5] On average, the hospitals invested just 1.16 percent of their revenue in IT including IT outsourcing or .56 percent without outsourcing. In contrast, Mithas et al. (2013) report an average intensity of 2.8 percent (range of zero percent to 40 percent). Similarly, Han and Mithas (2013) report an average intensity of 2.77 percent excluding IT outsourcing (range of .21 to 19.14

Moreover, we found an association between increases in *IT Staff Intensity* and successive positive changes in the *Volume of Media Coverage* in Model 4 ($b = 46.4340$, $p < .05$). With regards to the elasticity of *IT Staff Intensity*, we calculated a value of .040. Increasing IT staff expenditures from 0.6% to 1.2% of the total income was related to a 4% increase in media coverage. There was no significant effect of the other types of IT investments on the *Tenor* and *Volume of Media Coverage*. Contrary to our theoretical expectations, Model 6 revealed no significant relation between any IT investment type and the *Content of Media Coverage*, i.e., media reports related to quality. In sum, the results partially support Hypothesis 1.

Hypothesis 2 predicted that the positive relationship between increases in IT investments and increases in media reputation will be stronger for the *Tenor of Media Coverage* (generalized favorability) than for the *Volume of Media Coverage* (being known) and the *Content of Media Coverage* (being known for something). The respective results were mixed. As expected, increases in *IT Equipment Intensity* were more strongly associated with increases in the *Tenor of Media Coverage* than with increases in the *Volume* ($z = 1.330$, $p < .1$) or *Content of Media Coverage* ($z = 2.632$, $p < .01$). Contrary to our prediction, however, no such pattern emerged with regards to *IT Staff Intensity* and *IT Services Intensity*. Thus, we find support for Hypothesis 2 for investments in IT equipment but not for the other types of IT investment.

Hypothesis 3 predicted that the positive relationship between increases in IT investments and increases in the *Tenor of Media Coverage* would unfold such that IT investments attenuate *Negative Media Tenor* more than they enhance *Positive Media Tenor*. Models 8 and 10 in Table 2 tested this hypothesis. In line with our theoretical arguments, we found a positive and statistically significant link between increases in *IT Equipment Intensity* and increases in the *Tenor of Media Coverage* driven entirely by changes in *Negative Media Tenor*. The results of Model 8 show no significant association between increases in *IT Equipment Intensity* and *Positive Media Tenor*. In contrast, increases in *IT Equipment Intensity* were

percent) in a sample of 281 firms in a panel of 990 observations. This implies, that the hospital organizations in our sample have a – on average – much lower IT intensity than a broad range of industries. Increasing hospitals' IT intensity to the intensity reported by Han and Mithas (2013), would require an increase in IT investments by a factor of 4.95, potentially triggering a subsequent 14.36 percent improvement in media reputation.

negatively related to subsequent increases in *Negative Media Tenor* in Model 10 (b = -.1642, p < .01). The elasticity was -.014, indicating that doubling the *IT Equipment Intensity* was linked to a decrease in *Negative Media Tenor* by 1.4%. This reveals that investments in IT equipment help to buffer the organization from negative press. Similarly, underinvestment and decreases in IT equipment appear to increase a hospital's exposure to negative press and declining media reputation. Changes in IT investments, however, did not appear to affect changes in *Positive Media Tenor* in any detectable way.

To further validate the result from our econometric analyses, we performed a number of robustness checks. First, we applied the Arellano-Bond general method of moments (GMM) estimator to account for the possible endogeneity of our focal independent variables. The GMM estimator has been designed explicitly to account for the possible bias induced by autoregressive model specifications (i.e., inclusion of a lagged dependent variable) and potentially endogenous independent variables (i.e., IT investment in our case). GMM models are applicable especially when the panel data contains many cross-sectional units (N = 152 in our study), but few temporal observations (t = 5 in our study) (Arellano & Bover 1995; Blundell & Bond 1998). We, hence, modeled our lagged dependent variable as well as our IT investment variables as endogenous in our GMM models. All other variables were treated as exogenous. Second, we used a time dummy set instead of a linear time trend in our regression models. Time dummies better account for shocks that might occur in a given year affecting the dependent variable in that year. Our results were robust to changes in our treatment of both potentially endogenous covariates and time effects. We also re-examined the *being known for something* facet of media reputation with a focus on reputation for IT rather than for quality. Again, we developed a purpose-made dictionary of IT-related terms from Wikipedia following the same steps completed when developing the quality dictionary. We then replicated our analyses with intensity and tenor of IT-related coverage as alternative dependent variables. Consistent with our main results, we found IT investments to serve as a buffer reducing negatively connotated IT coverage.

4.3 Results from Qualitative Analyses

To gain richer insights into the link between IT investments and media reputation and to further explore the mechanisms that connect the two, we undertook two complementary qualitative analyses.

First, we conducted two sets of semi-structured interviews with journalists, newspaper editors, and hospital administrators to better understand the nature and impact of media coverage in healthcare. The first set consisted of interviews with eight journalists based in England. Four of these journalists had a specific focus on healthcare sector coverage in print media, writing for both national newspapers (e.g., The Guardian) and regional newspapers (e.g., The Coventry Herald, The Northampton Chronicle). The other four had a wider remit of press coverage, including science and technology, BBC public sector reporting and local news press including The Telegraph, BBC, and The Rapid NewsGroup. The interview questions asked about the reporting process and the signals they look for as reporters in composing their story. More specifically, they pertained to how journalists select what to cover, how they access and interpret relevant information, and how they form their overall impression of a hospital – all with special emphasis on the role of IT and technology more broadly. The average length of the interviews was about 35 minutes (range between 20 and 55 minutes). All interviews were recorded, transcribed, and analyzed with a focus on how journalists access, interpret, and translate IT-related signals into their writing. The second set comprised seven shorter interviews with newspaper editors and hospital administrators from England and the US. Here, our focus was to better understand the information exchange between journalists and hospitals.

Second, we conducted extensive content analyses of full-text newspaper articles from our sample. Our objective was to explicate more fully the actual content of media coverage, to triangulate the findings from our econometric analyses and semi-structured interviews, as well as to identify illustrative examples for journalists' technology frames at play in the printed texts. This involved a combination of computational techniques from text mining with a focus on topic modeling using LDA and keyword search followed by manual coding. Below, we focus on the findings from our interviews. An online appendix presents additional details on the methods and findings from our content analyses of the actual news articles.

Importantly, the objective of qualitative analyses consisted not in replicating the quantitative analyses. Instead, we intended to complement them with a clear focus on better understanding journalists' technology frames, their investigative practices, and their actual writing outcomes, thereby probing key assumptions of our theorizing.

4.3.1 On Journalists as Infomediaries and their Technology Frames

There are inherent information asymmetries between patients who have difficulty assessing the quality of service and staff in hospitals. A reporter explained that this asymmetry is further complicated through behavioral biases often signaled in patient satisfaction surveys:

> *"Patients do not honestly assess hospitals because they don't wanna dump on nurses and doctors who have cared for them or maybe even kept them alive….so these surveys of hospitals have traditionally been everything is 4.8 to 5.0 and it just tells … absolutely nothing."* (Interview with journalist writing for the Wall Street Journal)

Journalists act as important infomediaries who draw on prevailing frames which in turn influence their framing of the stories they write. A reporter explained how these frames are etched in their cognitive background:

> *"The framing (of a health IT story) lingers for so long historically ….cause that what's in your mind … people are going to mention the past for a long time to come. The journalists will always mention the last thing they heard…they've got their own Google upload memory.']."* (Interview with UK Journalist from for BBC News)

Where there is perceived congruence of their prevailing frames with expectations of what they see during a hospital visit, this will likely lead to coverage of the stories which positively reinforce the reputation.

> *"Once a hospital has a more established reputation then, you know all future coverage will be reflected through that…there is definitely a degree to which you can say, that the, the track record and the reputation of the hospital will have a bearing on how it is perceived by (both the public and by) journalists and will therefore influence the tenor of articles."* (Interview with UK Health Reporter writing for the Coventry Herald and The Guardian, among others)

> *"I think they will be influenced to a degree, by their expectations of what they see when they visit the hospital. And if a hospital meets those expectations then I think that there is a level of reassurance for the journalist… (It)has an impact in the way that they perceive the quality of the facilities and the quality of the operation, that is supporting the frontline medical care"* (Interview with UK Health Reporter writing for the Coventry Herald and The Guardian, among others)

Further, in framing the story, their expectations and tenor of coverage are shaped by wider policy and stated government priorities, which may or may not be related to the IT investment by the organization. A reporter explained:

> *"Under the (UK) Labour government we saw a rapid investment into health service. The reporters would be aware of those issues and policies would be speaking to stakeholders and experts and form an opinion of what an NHS trust hospital should be investing in. What a hospital was doing or not in terms of investment would be able to influence the tenor of the coverage."* (Interview with UK Health Reporter writing for the Coventry Herald and The Guardian, among others)

During the period of the study where policy and politics were encouraging evidence-based, state-of-the-art care, there was a clear expectation that technology and science would underpin the treatment processes of a modern hospital. Otherwise, it might risk failing to provide high quality care for all – a concern likely to be taken up by journalists. Thus, the technology frame against which journalists interpreted the IT signals from a hospital strongly favor evidence of IT investment.

> *"In that era, [journalists] had a positive connection [with technology]."* (Interview with UK Journalist from for BBC News)
>
> *"[More] generally, news stories about hospitals are disaster stories, …that is what ...sells newspapers. And a hospital's IT system breaking, I mean, that's ...really bad, like a... system breaking."* (Interview with journalist writing for the Wall Street Journal)

These statements highlight both the considerable reputational downside of inadequate IT and the need for hospitals to buffer negative press.

4.3.2 On Journalists' Investigative Practices and the Signaling Role of IT

Journalists consider themselves to have intuition and investigative hunches that lead them to understand and critically interpret what is going on. As one reporter noted: '*Journalists are trained to be cynical'*. They may read paperwork, including reports on recent investments the hospital had made, gaining information that they draw in their articles and the signals they cue regarding the hospital. Here they may also pick up information on investments into new staff or services. They draw on these skills to help bring together the many pieces required to write a news article as another reporter shared:

> *"So I would go and actually look through and dig through board papers more and you know attend meetings and, and really try to understand some of the, the issues at play. And that would include investment and, and output…going beyond press releases." (Interview with UK health journalist with Coventry Telegraph)*

In developing and framing their story, journalists will often look around the hospital and talk to staff during, for example, a launch event. They may also read through historical news releases or other documents, to get an overall picture of how things are in that particular hospital. When engaging with staff in a hospital, or walking through the hospital to do their reporting, technology artefacts are easily visible, and can provide a good photo opportunity, to support their story.

> *"The equipment and the bleeps are a sign that the picture is interesting 'cause it's moving, because it's, it's, it's got some atmosphere to it… print media would like a good photograph, and it would like all that equipment, and beeps, and bells, and whistles too…you would not necessarily talk about the IT or equipment. [you might*

> *simply write] somebody was visiting the hospital… or national print would frame the story in relation to what the government has or hasn't done."* (Interview with UK Journalist from BBC News)

Importantly, the above quote shows that journalists might attend to IT and its visible manifestations even when covering issues other than IT itself. An example of this can be seen in the following clip of a newspaper article from our dataset. Here, the journalist makes reference to a technology frame that links 'state of the art' with the facility and imagery technology available.

> *"Top scientist has joined Christie's after being lured by the state-of-the-art facilities at the Withington cancer hospital. …Christie Hospital NHS Trust pulled out all the stops to recruit the 36-year-old who was working as a professor of psychiatry and medical physics at Wisconsin University. … "This will be the finest facility in the world for brain imagery bar none and it will be very exciting to be part of the new research here."* (Extract from newspaper article, ID:767247)

Thus, even if journalists are covering a specific topic that is unrelated to technology or a medical device, the presence or absence of the technology can influence the way they frame the story at hand. In the quote below, a journalist explains that if he is called in to cover a story, for example, about a nurse who has delivered heroic levels of care, the presence of lots of paper records scattered around might accentuate for the reporter the obstacles the nurse had overcome. The outmoded level of technology, encapsulated in the stacks of paper, sends a subliminal influence that is used to accentuate the sentiment of the story. Similarly, if the same reporter was writing about a negative instance of care from a nurse or hospital ward, the same stack of paper records might render any criticism the journalist might have to be magnified.

> *"If you're writing a news story, I think the influence [of outdated paper records] would be more subconscious or subliminal. It would probably sink in there … and there is every chance that the journalist would be more likely to, to be slightly more effusive in their praise, or slightly more critical. Or actually certainly more critical in the concerns that they are raising in response to what they see. You know more effusive in praise if they are very impressed by the hospital [of the nurse they might be writing about] … and certainly more damning in their criticism, if they are concerned."* (Interview with UK Health Reporter writing among others for the Coventry Herald and The Guardian)

Consistent with our quantitative findings, the journalist in the above quote also notes the manner in which the absence of technology as a sign of visible, modern progressive care is more likely to accentuate a negative reaction within the sentiment of her writing, whereas the presence of technology can buffer against negative perceptions. We suggest this reaction accords with her technology frame of a state-of-the-art hospital and what she expects this might entail. The above quote thus indicates that the perceived

congruence with the journalist's technology frame tends to trigger the journalist to be less critical, with the opposite effect materializing in case of non-congruence.

4.3.3 ***On Journalists' Reporting and Hospitals' Reputation in the Media***

The positive expectations associated with investment in various technologies to support healthcare delivery also provide an occasion for the coverage of a news story. The general public, as readers of the news articles, are interested in knowing that their hospitals are investing in technology, in part because they assume that it will lead to better care, given the pervasive technology frames of IT enabling modern, state-of-the-art care. This suggests that readers among the public also hold technology frames, which guide their expectation that investing in digital technologies is newsworthy.

> *"In the case of the recent article that [Rodrigo] wrote, his story recognized [Hospital A] for being technologically advanced, which furthered their reputation… doctors in the area reported their offices receiving a strong influx in calls after the article was released."* (Interview with US News editor of the Virginia Gazette)

The journalists strongly acknowledged that launches and fundraising, both of which are often associated with IT, will tend to be covered with a positive sentiment. These articles might not only cover the actual launch event, but the various fundraisers and community gatherings associated with the event.

> *"Any technology launch will be covered with a sense of good will. Fundraising [which is often for various technologies] always gets good publicity… if you take [Maternity Hospital], a lot of their new IT is bought through fundraising of the local community. So, if you're talking about a scanner, there's already been a fundraising campaign, and, and they're, you know, picked up [positively] in the press…that's no mystery really."* (Interview with UK Journalist from BBC News)

In accordance with the public's and the journalists' positive technology frames of associating better care with technology investment, the press releases will be more frequent in addition to positively focused. However, this also implies that those hospitals that are not investing in new technology will have fewer occasions for such positively covered stories.

> *"The hospitals with more resources and who have spent more on science and technology will put out more press releases. Or have scope to put out more press releases… they will generally be more engaged with the media in terms of addressing any concerns that are brought to them in a more constructive way… can respond with more proactive stories in a positive way."* (Interview with UK Health Reporter writing among others for the Coventry Herald and The Guardian)

The following story from our sample that covered a website launch supports this idea:

> *"Youngsters worried about going into hospital … can have their questions answered thanks to a new website from Great Ormond Street Hospital [GOSH] For Children. Launched last week, the GOSHKids website … aims to provide information for children and teenagers about their medical conditions and calm anxiety about going into hospital. […] Michael visits the hospital three times a week for dialysis. He recently added his own story to the site. It was written on a laptop provided by the hospital's school so he can play games or do homework during dialysis sessions. "There was nothing like this around when I first started coming here, " he says... And any child can become a GOSHKids reporter by writing their own stories about coping with illness."* (Extract from newspaper article, ID:66001)

Further, these positive events associated with technology launches develop a lasting impression about the hospital as being fit to provide state-of-the-art care. A hospital builds a reputation through various technology related events that create a positive long-term bias among journalists which will influence the next article written about the hospital. In this way, technology acts as a buffer against potential negative coverage in the future. Even if the next news story is about a different topic, the positive impression from the previous press coverage of the hospital carries over, both for readers and journalists.

> *"If the last story had been associated with fundraising or buying a new piece of equipment, you know, scanners, journalists will think of this news, you know. Any new piece of equipment like that. And so then they remember the hospital. There's also a sort of, it's… the last story is remembered… So even if the fundraising campaign associated with IT, well, several years ago, it would have raised the profile of the hospital. So, the hospital remains in the news, even though perhaps it's not investing in new technology this year."* (Interview with UK Journalist from BBC)

Overall, these qualitative insights support key assumptions underlying our theorizing. In particular, our qualitative findings show how journalists' technology frames lead them to pick-up, interpret, and incorporate IT-related signals into their writing – thereby corroborating the role of journalists' technology frames as an important mechanism that links a hospital's IT investments on the one hand and its subsequent reputation in the media on the other hand. In this way IT investments can signal congruence between a journalist's technology frame and the visible evidence of being a state-of-the-art hospital. Our qualitative findings also provide further granularity and richness to our main quantitative results and how the tenor of media articles is influenced. The qualitative insights help to better understand why journalists' overall sentiment of a hospital is shaped especially by IT equipment as a particularly visible signal. They also explicate why IT investment serves as a buffer against negative media coverage given the high expectations regarding modern technology triggered by journalists' technology frames and the broader modernization

discourse they are embedded in, journalists' inclination to focus on critical events, and journalists' biases induced by the carryover effect of prior positive press.

5 Discussion

Taken together, our findings broaden our understanding of IT and reputation with wider implications for IT payoff research around social value. We contribute theoretically by combining technology frames and signaling theory to aid our understanding of media reputation, and conclude with implications for practice and policy.

5.1 Implications for Research

Our theoretical considerations and empirical findings are of broader relevance for research and theory on the value of IT. Perhaps most importantly, our study responds to recurring calls to extend the scope of IT payoff research (Agarwal et al. 2010, Agarwal and Lucas Jr 2005, Kohli and Grover 2008, Salge et al. 2015). So far, most studies in this literature stream have focused on the short-term value of IT and generally emphasized efficiency and effectiveness improvements that can be attributed to IT investments. A number of meta-analyses and reviews (Agarwal and Lucas Jr 2005, Kohli and Devaraj 2003, Kohli and Grover 2008) established that IT creates *operational value* and *financial value,* and shed light on boundary conditions, complementarities, and how such value is manifested. Indeed, IT can create value on dimensions other than efficiency and effectiveness or for establishing competitive advantage (Kohli and Grover 2008), while being appreciated by external stakeholders such as customers, suppliers, and regulatory authorities (Polykarpou et al. 2018). By accounting for how such value is created, the IS discipline can paint a clearer picture of the impacts of IT investments.

In our study, we build on these insights by demonstrating that IT investments can serve as a signal that shapes organizational reputation as reflected in the media. In so doing, we advance our understanding of IT and social value as distinct from other forms of (business) value. In particular, our empirical results revealed that the reputational effect of IT goes beyond value achieved by IT-induced improvements in efficiency and effectiveness. Importantly, we also show how signaling and framing, as two highly

complementary theoretical perspectives, add insights in explaining the process whereby journalists attend to IT-related signals, interpret them, and incorporate them into their technology frames when writing about a particular organization. Both perspectives are closely intertwined when explicating the IT-reputation link in that IT serves as a signal for unobservable organizational characteristics such as information processing capabilities or general organizational "fitness", while technology frames embedded in wider discourses (Orlikowski and Gash 1994) serve as lenses through which journalists and other stakeholders view and interpret IT-related signals.

Table 3: Five IT Value Archetypes

Value Archetype	***Operational***	***Financial***	***Psychological***	***Societal***	***Social***
Value-Creating Mechanism	IT as an enabler of effective and efficient internal processes	IT as an enabler of efficient resource use	IT as an enabler of individual well-being	IT as an enabler of social welfare and equality	IT as a signal shaping the evaluations by external stakeholders
Value Indicators	error rates, objective and perceived quality, cycle times	return-on-investment, return-on-assets, expenses, market value, risk reduction	technostress, job satisfaction	income distribution, development, access to information, GDP	reputation, legitimacy, status
Dominant Perspective	internal	internal	internal	external	external
Unit of Analysis	process, business unit, firm	business unit, firm	individual	region, country	business unit, firm
Focal Evaluators	members of production operations, and service delivery, value-chain partners, customers	members of finance and accounting, board members, stakeholder	employees	society, policy, NGOs	rating agencies, regulatory authorities, media, society
Selected IS References	Mcafee 2002; Ray et al. 2005; Setia et al. 2013	Bardhan et al. 2007; Barua et al. 2004; Bharadwaj et al. 1999, 2009; Dehning et al. 2003; Hahn et al. 2009; Im et al. 2001	Bala and Venkatesh 2013; Joseph et al. 2007; Morris and Venkatesh 2010; Ply et al. 2012	Dewan and Kraemer 2000; Racherla and Mandviwalla 2013	Lim et al. 2013; Wang 2010
Selected HIT References	Amarasingham et al. 2009; Appari et al. 2013; Bhargava and Mishra 2014; Devaraj and Kohli 2000; Kwon and Johnson 2014	Kohli et al. 2012; Kohli and Devaraj 2003; Lee et al. 2013; Menon and Lee 2000			

Notes. Grey-shaded column indicated the focus of our study.

It is thus through congruence with prevailing technology frames of a target audience that IT obtains meaning and can create reputational value. While careful alignment of IT investments with the organizational strategy is seen as critical to create operational and financial value from IT, reputational value – and arguably other forms of social value – will therefore tend to thrive on close alignment with the technology frames prevailing among the target audience and the broader expectations of modern

organizations. As we have shown, perceived congruence with prevailing technology frames will buffer hospitals from negative press as a form of negative social judgement, thereby helping them to preserve their reputation in the media. However, our results also indicate that the visibility and observability of IT investments as signals for quality of care affect the strength of this buffering effect. Indeed, the buffering effect was strongest for investments in IT equipment as notably more visible form of IT investment than IT staff or service expenditures. Amplified by current digital transformation discourses and the COVID-19 crisis, however, IT has become inherently linked with – and firmly embedded in – state-of-the-art organizations ranging from healthcare to manufacturing. This raises the bar for IT to go beyond its role of a reputational buffer and to trigger lasting increases in positive social judgement. Increasingly, this might be a distinct possibility for the most ambitious organizations that make IT a core part of their strategy and operations – such as smart hospitals.

Even though our study focused on reputation as a particular form of social value, there is potential scope for future IS research to examine multiple forms of social value. Indeed, we see ample opportunities to expand our knowledge of the social value of IT as a fifth IT value archetype depicted in Table 3. From a methodological viewpoint, our study will be informative for future researchers in that it demonstrates the potential of media data, a data source that still has to be exploited more fully by IS research. This has implications for the IS community beyond the IT payoff literature in that it illustrates the potential of computational content analysis techniques as a new means to study not only the link between micro-level IT investment decisions and macro-level outcomes, but a broad set of research topics (Antons et al. 2016, Chen et al. 2012, Müller et al. 2016).

5.2 Implications for Practice and Policy

Understanding how IT investments can help organizations to build and sustain reputation is of particular relevance for practice and policy in healthcare, where patients are often unable to assess the quality of care (Berry and Bendapudi 2007), relying instead on the reputation of health service providers. This is likely to be of growing relevance in the English healthcare system and beyond, where patients are

increasingly empowered to freely choose the provider that they deem most capable. US hospitals face similar market conditions, where the level of patient satisfaction now affects hospital financial reimbursements. If congruent with prevailing technology frames and broader field-level discourses, IT investments can serve as signals for superior information processing, state-of-the-art healthcare, and for being a modern hospital that is likely to influence patients' choice. State-of-the-art IT has become an essential precondition to contemporary organizations. Its absence is thus likely to threaten organizations' reputation and potentially the license to operate. Prior research has also discussed the downside risks of IT. For instance, information security threats may arise when (former) employees, external stakeholders or hackers gaining unauthorized access to sensitive information assets of organizations (e.g., Wang et al., 2015). Such situations might result in severe reputational damage. Our findings, however, could be interpreted as suggesting that increases in IT investments signal that such risks are less likely to occur in the future. By doing so, the organization buffers itself to some extent from negative future media coverage.

This dimension of IT value has been underappreciated in research and practice and now merits management attention in IT investment decisions and related external communication. In this regard, decision makers may consider using IT even more explicitly to signal technological progressiveness and superior decision-making capabilities. Dedicated IT-based communication such as press releases on the latest IT additions, specific sections in corporate reports and close personal interactions with journalists might help managers reinforce the strength of this signal, thereby potentially amplifying the still relatively limited reputational effect of IT. Clearly, further research is needed on the role of IT-related public communications in this regard. A possible starting point could be the emerging literature stream that discusses the roles of CEO, CIO and CDO in promoting the IT function in order to achieve positive external perceptions (Lim et al. 2011, 2013).

Our study also points policymakers and practitioners to the importance of considering the reputational value dimension during large-scale IT funding initiatives, and their individual IT investment and adoption decisions. Only then will they be able to fully assess the expected value of IT and compare

competing alternatives. Likewise, IT managers aware of the reputational value of IT can craft more effective business cases for IT.

Understanding the role of IT as a mechanism to gain and sustain reputation in today's digital age appears to be increasingly relevant for policymakers and practitioners in healthcare and beyond. Although our insights are drawn from a study focusing on healthcare, they might be of interest to practitioners in other of settings that have the intangibility and complexity of hospital reputation. This includes, for instance, experience goods such as higher education (e.g., Rindova et al. 2005) and other professional services such as law and consulting (e.g., Jensen and Roy 2008). That said, dedicated studies in these contexts are needed to establish the generalizability of our findings.

6 Conclusion

We sought to understand if, how, and to what extent IT investments help organizations to gain and sustain their reputation in the media. To this end, we combined conceptual arguments from signaling theory and technology frames to examine and compare the effects of different IT investment types on three facets of reputation. We drew on panel data of all 152 public, non-specialist English hospital organizations to cover five consecutive years of IT investment decisions and subsequent changes in media reputation as reflected in 175,973 English newspaper articles and conducted extensive qualitative analyses to complement our econometric approach. We have found that changes in the IT *staff* intensity are positively associated with changes in the *volume* of media coverage. Changes in IT *equipment* intensity, in turn, are positively linked to changes in the *tenor* of media coverage. Importantly, we found that increases in investments in IT equipment do not trigger more positive press coverage but buffer the hospital at least to some extent from negative press. Conversely, decreases in IT investments are associated with significantly greater negative press. Overall, our findings highlight the role of IT investment as a prerequisite for preserving organizational reputation in the digital age. We hope that our study will inspire a growing line of research on the multifaceted effect of IT on reputation and other forms of social judgement.

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