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1 Focus of the Research Curation

Since the inception of *MISQ* in 1977, information systems (IS) control and governance have been, and continue to be, vibrant research streams of key interest to the IS discipline. While both IS control and governance are concerned with ensuring the alignment of IS-related activities and information technology (IT) artifacts and resources (including human resources) with an organization's objectives and strategy, the two are often viewed as operating at different levels; with IS governance focusing on alignment mechanisms at the meso level and IS control focusing on managerial alignment mechanisms at the micro level. This curation summarizes IS control and governance research in *MISQ*. In total, we identified 53 papers—spanning the time period from 1978 to 2020—in which IS control (33 papers) or IS governance (20 papers) represent a central topic of the overall study. In the following, we review these papers in terms of research progression and thematic advances and portray them in an infographic (see Figure 1). Table 1 provides details of the 53 papers.

2 Progression of IS Control & Governance Research in *MISQ*

IS control: Early papers, published in *MISQ* in the late 1970s and early 1980s, focus on internal control activities and issues (i.e., within organizations). These papers tend to adopt a cybernetic view of control, in which controllers set known performance 'standards' and take corrective actions to address any deviations from those standards. Topic-wise, early IS control research is primarily concerned with how managers and other stakeholders, such as IS auditors, can control various aspects of the IS development (ISD) lifecycle to ensure the quality and reliability of software systems along with the controls embedded in those systems (Halloran et al. 1978; Koch 1981; Merten and Severance 1981; Rittenberg and Purdy 1978). Other papers look into control-related challenges and deficiencies contributing to the failure of ISD projects and suggest corrective steps (Schmitt and Kozar 1978), including the use of an evolutionary management approach (Zmud 1980). As well, Munro and Wheeler (1980) and Swanson and Culnan (1978) examine the information requirements for management control and the role of document-based software systems in supporting corresponding control activities, respectively.

From the mid-1980s through the 2000s, *MISQ* papers continued to study the quality control/audit of software systems and system-based data processing (Ahituv and Zelek 1987; Hansen and Hill 1989), the control of ISD projects (Baskerville and Stage 1996; Dibbern et al. 2008), and the role of software-based systems in supporting management control (Sengupta and Te'eni 1993). Moreover, several papers cover additional topics, such as individual software users' perceptions of personal control during IS implementation (Baronas and Louis 1988), the unintended effects of behavior control on trust in virtual teams (Piccoli and Ives 2003), and the use of software systems as a means for enacting management controls (Kohli and Kettinger 2004; Tillquist et al. 2002). In doing so, IS control research in *MISQ* increasingly transitioned from a cybernetic to a behavioral view of control, in which control is commonly defined as any "attempts to ensure that individuals [...] act in conformity with predefined strategies" (Piccoli and Ives 2003, p. 368; cf. Dibbern et al. 2008).

During the first half of the 2010s, the control of system quality and security (Li et al. 2012; Spears and Barki 2010), as well as the control of both internal and (offshore) outsourced IS projects (Chua et al. 2012; Gregory et al. 2013; Ply et al. 2012), continued to be key research

streams in *MISQ*. Concurrently, a new stream of IS control research emerged, analyzing the control components used by game companies to exercise control over virtual worlds (Roquilly 2011), the types of control point constellations in digitally enabled, interorganizational value networks (Pagani 2013), the IS-enabled planning and control of buyer-supplier relationships (Wang et al. 2013), as well as the link between control configurations and the evolution of digital infrastructures (Henfridsson and Bygstad 2013). These papers have in common that they emphasize what can be referred to as a structural view of control in which IT artifacts, such as digital infrastructures, represent the control target and/or serve as a means for structuring control relationships, and ultimately, for exercising control over diverse actors. This trend toward a structural view of IS control has carried on into the second half of the 2010s, with *MISQ* papers examining the role of boundary resources in securing control over platform-based service systems (Eaton et al. 2015), the role of IT infrastructure flexibility in enabling control over post-M&A integration activities (Benitez et al. 2018), and the control and organizing logics of platform-based ecosystems (Sandberg et al. 2020). In parallel, an ongoing research focus on the control of internal and outsourced IS projects can be observed (Jenkin et al. 2019; Moeini and Rivard 2019; Susarla and Mukhopadhyay 2019; Wiener et al. 2016).

IS governance: The earliest *MISQ* paper on IS governance was published in 1980 (Olson and Chervany 1980) and addressed the governance of the IT function (short: ITG). Subsequent papers studied ITG as well, but also relational governance (e.g., Goo et al. 2009), corporate governance (e.g., Drnevich and Croson 2013), and platform governance (e.g., Deng et al. 2016) including polycentric governance (Mindel et al. 2018). To this day, ITG remains to be a central IS governance research topic (Brown 1999; Olson and Chervany 1980; Sambamurthy and Zmud 1999; Tanriverdi 2006; Venkatesh et al. 2019; Williams and Karahanna 2013; Wu et al. 2015; Xue et al. 2008). Gregory et al.'s (2018) definition of ITG, based on a functional conceptual view, refers to structural, processual, and relational mechanisms to describe patterns of how to govern the IT function. Earlier ITG papers tend to focus on structural mechanisms, such as decision rights or organization structuring (i.e., centralization, decentralization, federated), making the IT function a governance target with an internal focus often aimed at technical specialists and managers within the organization (e.g., Olson and Chervany 1980; Sambamurthy and Zmud 1999; Tanriverdi 2006). In contrast, later ITG papers often have both an internal and external focus (e.g., Xue et al. 2008). For example, Williams and Karahanna (2013) examine coordination mechanisms not only within a large public U.S. institution, but also with state funding agencies and external consultants. In general, ITG papers always examine structural mechanisms, and sometimes processual mechanisms (e.g., procedures and standards for funding decisions) (e.g., Xue et al. 2008) and/or relational mechanisms (e.g., informal networking practices) (e.g., Brown 1999).

Displaying a predominantly external focus, *MISQ* papers on relational governance (Goo et al. 2009; Gopal and Koka 2012; Grover and Kohli 2012; Rai et al. 2009) were published around 2010; that is, later than most ITG papers but before platform governance papers surfaced. Describing governance as one layer of relational arrangements for IT value co-creation, Grover and Kohli (2012) employ a functional conceptual view. In contrast, the papers on relational governance in IS outsourcing/offshoring settings adopt a behavioral conceptual view of IS governance (Goo et al. 2009; Gopal and Koka 2012; Rai et al. 2009). The corporate governance papers (Benaroch and Chernobai 2017; Drnevich and Croson 2013; Pan et al. 2018) also adopt a behavioral conceptual view, which is consistent with their agency theory underpinning, and have at least some external focus.

MISQ papers on platform governance first appeared in 2016 (Deng et al. 2016; Gregory et al. 2018; Mindel et al. 2018; Song et al. 2018; Svahn et al. 2017). Digital platforms ushered in a new conceptual view of IS governance based on a business logic focused on ecosystems and co-creation of value (cf. Grover and Kohli 2012). All platform papers, except (Svahn et al. 2017), are external or both internal and external in focus, reflecting the change of scope of governance that now spans organizational boundaries. In these papers, platform-based ecosystems, hosting a diverse set of actors (e.g., app developers and users), often represent the target of IS governance. With the emergence of platforms, the conceptual view of governance shifted toward patterns of platform standards, automated processes, and multi-layered architecture arrangements (Gregory et al. 2018).

3 Thematic Advances in Knowledge

Across time, three overarching themes pertaining to the role of IS can be observed in IS control and governance research published in *MISQ*: IS as a (1) *target*, (2) *context*, and (3) *enabler* or *means* of control/governance activities.

IS as a *target*: Focusing on the question of how to ensure the quality and reliability of software systems, early IS control papers in *MISQ* often view the IT artifact itself as the control target (e.g., Halloran et al. 1978; Koch 1981; Merten and Severance 1981). More recently, this research theme has experienced a notable ‘revival,’ with a particular emphasis on system compliance and security (Li et al. 2012; Spears and Barki 2010), as well as the evolution of digital infrastructures and platforms (Henfridsson and Bygstad 2013; Sandberg et al. 2020). A similar pattern applies to IS governance research in *MISQ*, with several earlier papers (e.g., Olson and Chervany 1980; Sambamurthy and Zmud 1999), as well as more recent papers (e.g., Benaroch and Chernobai 2017; Wu et al. 2015), focusing on governance activities explicitly targeted at IT resources.

IS as a *context*: Since the early works by Schmitt and Kozar (1978) and Zmud (1980), research that uses IS primarily as a challenging control context has been an enduring research theme in *MISQ*. Interestingly, there has been a noticeable increase in corresponding papers since the early 2010s, with a particular focus on the exercise of control in a variety of IS project contexts (e.g., Chua et al. 2012; Jenkin et al. 2019; Moeini and Rivard 2019). Among other things, these papers have led to an expansion of the conceptual toolbox available to IS control researchers, including the concepts of control balancing (Gregory et al. 2013) and enactment (Wiener et al. 2016). In contrast, only a handful of *MISQ* papers study governance issues in different IS contexts, such as relational governance in outsourced settings (e.g., Goo et al. 2009; Gopal and Koka 2012; Rai et al. 2009).

IS as an *enabler/means*: While early IS control papers published in *MISQ* focused on the enabling role of IS in supporting managerial control processes (e.g., Munro and Wheeler 1980; Swanson and Culnan 1978), since the 2000s, there has been a steady increase in papers focusing on the use of IS, and digital platforms in particular, as a control means (e.g., Eaton et al. 2015; Pagani 2013; Sandberg et al. 2020). Since 2016, a similar trend can be observed for IS governance research in *MISQ* with a strong focus on platform-based governance (e.g., Deng et al. 2016; Gregory et al. 2018; Svahn et al. 2017). Corresponding papers view digital platforms as a governance means; for example, as a means of governing crowdsourcing activities (Deng et al. 2016) or sustaining polycentric information commons (Mindel et al. 2018).

Taken together, the study of IS control and IS governance in *MISQ* has varied noticeably. For instance, when considering the underlying conceptual view, the cybernetic view never appears in governance papers, but frequently appears in early control papers. Similarly, until recently, no

MIS QUARTERLY RESEARCH CURATION: IS CONTROL & GOVERNANCE

discussion of structural mechanisms has appeared in IS control papers, while such mechanisms are virtually always present in functional ITG papers. Still, our analysis suggests that IS control and governance streams published in *MISQ* have much in common and that this commonality is growing: both streams draw from a broad range of theories and employ an even mix of qualitative and quantitative methodologies; early papers in both streams are very inner-focused and typically view the role of IS as that of the target, whereas recent papers are more externally focused and sometimes describe multiple IS roles simultaneously. Especially with the emergence of digital platforms, the commonality, if not the convergence, between the two research streams is hard to ignore when both streams view the role of IS increasingly as a means of enacting control/governance activities (see green oval in the infographic). Relatedly, a growing number of IS control and governance papers view digital infrastructures/platforms as control or governance targets (e.g., Henfridsson and Bygstad 2013; Song et al. 2018). As well, perhaps nowhere is the convergence of the two research streams more pronounced as when it comes to the definition and use of the terms ‘control’ and ‘governance.’ For example, some *MISQ* papers describe control as a central element of platform governance (e.g., Gregory et al. 2018; Song et al. 2018; Svahn et al. 2017); others even seemingly use the two terms as synonyms (e.g., Sandberg et al. 2020).

4 Conclusion

Both IS control and governance are among the earliest topics studied in *MISQ*. While the foci of *MISQ* papers on IS control and governance differed notably at first, over time, especially with the growing interest in platform research, one can observe an increasing convergence in how the two research topics are studied and viewed. In conclusion, we hope that this curation provides a foundation and inspiration for future research on the critical issues of IS control and governance.

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***MIS QUARTERLY* RESEARCH CURATION: IS CONTROL & GOVERNANCE**

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***MIS QUARTERLY* RESEARCH CURATION: IS CONTROL & GOVERNANCE**

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***MIS QUARTERLY* RESEARCH CURATION: IS CONTROL & GOVERNANCE**

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MIS QUARTERLY RESEARCH CURATION: IS CONTROL & GOVERNANCE

Table 1. MISQ Papers on IS Control & Governance (Coding Summary)

Notes: Paper listed in chronological order (1978-2020); IS control papers (C) = White rows, IS governance papers (G) = Gray rows; Papers may display multiple Roles of IS, Conceptual views (and mechanisms, where appropriate), Major topics, and Methods.

| # | Reference | Cat. | Role of IS | Conceptual view | Major topic | Study focus | Study setting | Method |
|----|------------------------------------|------|----------------|-------------------------|--|-------------|--|----------------------------|
| 1 | Halloran et al. (1978) | C | Target | Cybernetic | Control of system quality | Internal | ISD | Conceptual |
| 2 | Rittenberg and Purdy (1978) | C | Target | Cybernetic | Control/audit of system quality and reliability | Internal | ISD | Field survey |
| 3 | Schmitt and Kozar (1978) | C | Context | Cybernetic | ISD project control (and planning) | Internal | ISD failures | Case study |
| 4 | Swanson and Culnan (1978) | C | Enabler/ Means | Cybernetic | Role of document-based IS in supporting management control (and operational control) | Internal | Management planning and control | Conceptual |
| 5 | Olson and Chervany (1980) | G | Target | Functional (structural) | Centralization versus decentralization | Internal | Information services organization | Field survey Interviews |
| 6 | Munro and Wheeler (1980) | C | Enabler/ Means | Cybernetic | Information requirements for management control | Internal | Management control | Field study Interviews |
| 7 | Zmud (1980) | C | Context | Cybernetic | Control of large ISD projects (with their inherent uncertainty) | Internal | Evolutionary ISD management approach | Conceptual |
| 8 | Koch (1981) | C | Target | Cybernetic | Control/audit of system quality and reliability | Internal | Online computer auditing | Conceptual |
| 9 | Merten and Severance (1981) | C | Target | Cybernetic | Control/audit of system quality and reliability | Internal | Data processing control | Field survey |
| 10 | Ahituv and Zelek (1987) | C | Target | Cybernetic | Development of (instant) quality control technique | Internal | Control of large batch-processing jobs | Mathematical modeling |

MIS QUARTERLY RESEARCH CURATION: IS CONTROL & GOVERNANCE

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|----|-------------------------------------|---|-------------------|-------------------------------------|--|----------|--|----------------------------------|
| 11 | Baronas and Louis (1988) | C | Context | Behavioral | User perceptions of control over their work during ISD | Internal | IS implementation (user involvement) | Field experiment |
| 12 | Hansen and Hill (1989) | C | Target | Cybernetic | Control of system quality and reliability | Both | Electronic data interchange (EDI) | Field survey |
| 13 | Brown (1999) | G | Context | Functional (structural, relational) | ITG modes; Horizontal mechanisms | Internal | IT function | Case study |
| 14 | Sambamurthy and Zmud (1999) | G | Target | Functional (structural) | ITG modes and decision rights; Corporate governance (secondary topic) | Internal | IT investment | Field survey Case study |
| 15 | Sengupta and Te'eni (1993) | C | Enabler/ Means | Behavioral | Managers' cognitive control over the execution of their decision strategy | Internal | Group decision support systems (GDSS) | Lab experiment |
| 16 | Baskerville and Stage (1996) | C | Context | Cybernetic | ISD project control through risk analysis | Internal | Prototype development | Action research |
| 17 | Tillquist et al. (2002) | C | Means | Cybernetic | IS design for management control and coordination of organizational activities | Internal | Organizational information systems | Conceptual |
| 18 | Piccoli and Ives (2003) | C | Context | Behavioral | Management control (behavior control and trust decline) | Internal | Virtual teams | Experiment |
| 19 | Kohli and Kettinger (2004) | C | Means | Behavioral | Management control (use of IS to informate the clan and create an environment conducive to the exercise of "concertive" control) | Internal | Controlling autonomous professionals (physicians) | Action research |
| 20 | Tanriverdi (2006) | G | Target | Functional (structural) | ITG modes | Internal | Cross-unit synergies in large multi-business companies | Survey Archival data analysis |
| 21 | Dibbern et al. (2008) | C | Context | Behavioral | ISD project control (level of client extra costs, including control costs) | External | ISD offshoring projects (India) | Multiple-case study |

***MIS QUARTERLY* RESEARCH CURATION: IS CONTROL & GOVERNANCE**

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|----|--------------------------------|---|---------|-------------------------------------|--|----------|--|--|
| 22 | Xue et al. (2008) | G | Target | Functional (structural, processual) | ITG archetypes; Centralization | Both | IT investment decision-making in hospitals (Chinese) | Multiple-case study |
| 23 | Goo et al. (2009) | G | Context | Behavioral; Functional (relational) | Relational governance | External | IS outsourcing (Korean vendors) | Web-based survey |
| 24 | Rai et al. (2009) | G | Context | Behavioral; Functional (relational) | Relational governance; Social embeddedness and cultural characteristics | Both | IS offshoring (Indian vendor) | Field study (surveys and project data) |
| 25 | Spears and Barki (2010) | C | Target | Cybernetic | Control of system security (in respect to control development and performance) | Internal | IS security risk management (user participation) | Multi-method (interviews and field survey) |
| 26 | Roquilly (2011) | C | Context | Structural | Core and complementary components used by game companies to ensure control and development of virtual worlds | External | Virtual worlds (gaming) | Content analysis (contractual documents) |
| 27 | Chua et al. (2012) | C | Context | Behavioral | ISD project control (enactment of clan control as dual process: clan building and leveraging) | Both | Complex IS projects | Longitudinal case study |
| 28 | Gopal and Koka (2012) | G | Context | Behavioral | Relational governance | External | IS outsourcing (Indian vendors) | Survey |
| 29 | Grover and Kohli (2012) | G | Means | Functional (structural, relational) | Governance as one layer of relational arrangements for IT value co-creation | External | Co-creation of IT value in ecosystem | Conceptual |
| 30 | Li et al. (2012) | C | Target | Behavioral | System controls (e.g., related to data-processing integrity) and forecasting accuracy/quality | Internal | Financial reporting systems | Archival data analysis |
| 31 | Ply et al. (2012) | C | Context | Behavioral | ISD project control (behavior and outcome controls associated with different CMM levels) | Internal | IS professionals' job attitudes and perceptions | Field survey |

MIS QUARTERLY RESEARCH CURATION: IS CONTROL & GOVERNANCE

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|----|---------------------------------------|---|----------------|---|--|----------|---|---|
| 32 | Drnevich and Croson (2013) | G | Means | Behavioral | Governance of IT investment from strategy perspective | Both | IT investment | Conceptual |
| 33 | Gregory et al. (2013) | C | Context | Behavioral | ISD project control (level of shared understanding triggering control-balancing decisions: control types, degree, style) | External | ISD offshoring project (India) | Longitudinal grounded theory case study |
| 34 | Henfridsson and Bygstad (2013) | C | Target | Structural | Configurational perspective (centralized vs. distributed control) of digital infrastructure evolution | Both | Digital infrastructures | Multi-method (in-depth case study and case survey) |
| 35 | Pagani (2013) | C | Means | Structural | Structural shifts (in control point constellations) in digitally enabled value networks | External | Interorganizational value networks | Field study |
| 36 | Wang et al. (2013) | C | Means | Structural | Buyers' use of information processing capabilities to control interactions with suppliers | External | Supply chain management | Field survey |
| 37 | Williams and Karahanna (2013) | G | Context | Functional (structural, processual, relational) | Federated ITG; Coordination processes | Both | IT function | Longitudinal, comparative critical realism case study |
| 38 | Eaton et al. (2015) | C | Means | Structural | Tuning of boundary resources by platform operator to manage the tension between securing control over and enabling participation in service system | External | Platform-based service system (Apple's iOS) | Embedded case study |
| 39 | Wu et al. (2015) | G | Target & Means | Functional (structural, processual, relational) | ITG mechanisms for business/IT alignment | Internal | IS strategy | Field study Matched-pair survey |
| 40 | Deng et al. (2016) | G | Means | Behavioral; Platform | Governance as one of four microtask crowdsourcing structures | External | Amazon's Mechanical Turk crowdsourcing platform | In-depth interpretive field study Survey |

MIS QUARTERLY RESEARCH CURATION: IS CONTROL & GOVERNANCE

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|----|--------------------------------------|---|-------------------|--|--|----------|---|--|
| 41 | Wiener et al. (2016) | C | Context | Behavioral | IS project control (control configuration: modes – <i>what?</i> versus control enactment: style and congruence – <i>how?</i>) | Both | Internal and outsourced IS projects | Systematic literature review Conceptual |
| 42 | Benaroch and Chernobai (2017) | G | Target | Behavioral; Functional (structural, processual, relational) | ITG; IT competency level of board | Both | IT operational failures and SOX in financial services firms | Event study |
| 43 | Svahn et al. (2017) | G | Means | Platform; Functional (structural) | Governance as one key concern in respect to digital innovation platforms | Internal | Digital innovation at Volvo | Longitudinal case study |
| 44 | Benitez et al. (2018) | C | Means/ Enabler | Structural | IT infrastructure flexibility and post-M&A integration capability (referred to as control dimension of flexibility) | External | M&A (mergers and acquisitions) | Matched-pair field survey |
| 45 | Gregory et al. (2018) | G | Target & Means | Platform; Functional (structural, processual, relational) | Functional ITG versus platform governance | Both | IT function of large global bank and impact of IT consumerization | Grounded theory case study |
| 46 | Mindel et al. (2018) | G | Target & Means | Behavioral | Polycentric governance of common pool resource (platform) | Both | Decentralized online information commons | Conceptual |
| 47 | Pan et al. (2018) | G | Context | Behavioral; Functional (structural) | Corporate governance | Both | IT sector | Archival data with panel data models |
| 48 | Song et al. (2018) | G | Target & Means | Behavioral; Platform | Platform governance | External | Software platform (Mozilla Firefox) | Field study (Firefox data) |

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|----|--|---|----------------|---------------------------|--|----------|---|--|
| 49 | Jenkin et al. (2019) | C | Context | Behavioral | ISD project control (effects of planning/control mechanisms on cognitive activities and mutual understanding) | Internal | ISD and mutual understanding (key stakeholders) | Mixed-methods |
| 50 | Moeini and Rivard (2019) | C | Context | Behavioral | Perceived control and IS project managers' risk response decision | Internal | Risk management in IS projects | Field surveys Expert interviews |
| 51 | Susarla and Mukhopadhyay (2019) | C | Context | Behavioral; Structural | Complementary contractual provisions (i.e., contingent control rights and credible commitments) and process/service innovation | External | IS outsourcing contracts | Statistical analyses |
| 52 | Venkatesh et al. (2019) | G | Means | Functional (structural) | ITG modes | External | ICT4D healthcare platform in India | Longitudinal field study Network analysis |
| 53 | Sandberg et al. (2020) | C | Target & Means | Structural | Distribution of design control as one digitally induced mechanism enabling and triggering the transition of an analog product platform toward an ecosystem-centered organizing logic | External | Evolution of platform-based ecosystem | Exploratory, longitudinal case study |

Figure 1. IS Control & Governance Infographic

