**Appendix A**

**Summary of the Literature**


<table>
<thead>
<tr>
<th>Research Perspective</th>
<th>Description</th>
<th>Related Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology acceptance</td>
<td>This research relies on variance-based models to examine antecedents of initial and continued IT use. The antecedents include individual cognition such as perceived usefulness of a new IT system and organizational factors such as management influence.</td>
<td>Bhattacherjee and Sanford 2006; Cooper and Zmud 1990; Davis 1989; Davis et al 1989; Edmondson et al. 2001; Joshi 1991; Joshi et al. 1999; Kim and Malhotra 2005; Kraut et al. 1998; Leonard-Barton and Deschamps 1988; Limayem et al. 2007; Lucas et al. 1988; Robertson 1989; Sabherwal et al. 2006; Taylor and Todd 1992; Tyre and Hauptman 1992; Venkatesh et al. 2003; Venkatesh and Davis 2000; Venkatesh et al. 2008; Zhu and Kraemer 2005</td>
</tr>
<tr>
<td>Task technology fit</td>
<td>This research examines the correspondence between task requirements, individual abilities, and the functionality of an IT system. It highlights the importance of the alignment between the three aspects in inducing positive IT-enabled task performance.</td>
<td>Goodhue 1998; Goodhue and Thompson 1995; Zigurs et al. 1999</td>
</tr>
<tr>
<td>Planned change</td>
<td>This research seeks to identify the sequence of activities (often referred to as “phases”) in a typical IT use process and to prescribe the stage models as plans for IT use management.</td>
<td>El Sawy 1985; Lassila and Branchau 1999; Nelson and Cheney 1987; Raho et al. 1987</td>
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</table>
### Research Perspective

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<tr>
<td>System dynamics</td>
<td>These studies employ system dynamics models to examine how the accumulative and marginal effects (i.e., stock and flow) of human cognition, such as learning and commitment to using a new technology, can affect IT use behaviors and organizational performance.</td>
<td>Black et al. 2004; Repenning 2002</td>
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<tr>
<td>Actor-network analysis</td>
<td>This research views IT use as social political processes and employs the actor-network framework to examine how ongoing negotiations among alliance (i.e., actor-networks) with heterogeneous political interests lead to alignment of interests, which eventually enables IT use.</td>
<td>Braa et al. 2004; Sarker et al. 2006; Walsham and Sahay 1999</td>
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<tr>
<td>Social construction of technology</td>
<td>This research assumes that IT use is neither determined by human actors nor technologies, but enacted through interactions between the two without a priori plans. It usually relies on case studies to capture IT use enactment processes.</td>
<td>Averou and McGrath 2007; Boudreau and Robey 2005; Davidson and Chismar 2007; Garud and Kumaraswamy 2005; Lapointe and Rivard 2005; Leonardi 2007; Lyttinen and Rose 2003; Majchrzak et al. 2000; Malhotra et al. 2001; Orlikowski 1996, 2000; Robey et al. 2002; Robey and Sahay 1996; Tyre and Orlikowski 1994; Volkoff et al. 2007</td>
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Appendix B

Progress of the Literature on IT Use

Critical to the research objective is identifying studies empirically analyzing bottom-up IT use processes. The studies included in the “bottom-up linkage” row were selected according to two criteria. First, they collected quantitative or qualitative data regarding both individual- and collective-level IT use patterns and outcomes. Second, they explicitly analyzed the linkage from the individual-level to the collective-level IT use patterns and outcomes. (Note: The numbering of the potential research areas corresponds to the legend in Figure 1 of the paper.)

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>(2) Collective level of IT use</td>
<td>Edmondson et al. 2001; Zhu and Kraemer 2005</td>
<td>Zigurs et al. 1999</td>
<td>Sawyer 1985; Lassila and Brancher 1999; Raho et al. 1987</td>
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<td>(4) Dynamic patterns</td>
<td></td>
<td></td>
<td>El Sawy 1985; Lassila and Brancher 1999; Nelson and Heney 1987; Raho et al. 1987</td>
<td>Black et al. 2004; Repenning 2002</td>
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Appendix C

Pseudo-Code of a Simulation Session

```
Create 53 employees (50 specialists, 2 managers, and 1 director)
Ask each employee {
    Set the 30-tuple, with each dimension takes a value of -1, 0, or 1 with equal probabilities
    Set learning rate \( p_1 \) = the learning rate treatment of the current simulation session
    If I am a manager
        [Set learning rate = 1.25 \times p_1]
    If I am a director
        [Set learning rate = 1.5 \times p_1]
    If the current workplace rigidity treatment = “rigidity”
        [form a tie with a randomly chosen superior]
    Else
        [form a tie with another randomly chosen employee]
}
Create the ITSS
Ask the ITSS {
    Set the 30-tuple, with each dimension takes a value of 0
    Set the flexibility \( p_2 \) = the ITSS flexibility treatment of the current simulation session
}
Create the work requirements
Ask the work requirements {
    Set the 30-tuple, with each dimension takes a value of -1, 0, or 1 with equal probabilities
}
Run one tick of the model clock {
    Ask the ITSS [adapts to the majority practices of employees]
    Ask each employee [learn from the ITSS and learn from each other (the order of these two actions is randomly determined)]
}
Repeat the “Run one tick of the model clock” procedure 12 times
Set assimilation of the ITSS = average (the proportion of identical values between the 30-tuples of the ITSS and the employees)
Set IT-based work performance = average (the proportion of identical values between the 30-tuples of the work requirements and the employees)
```

References


