Information Ergonomics for Digitalizing Work

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Laura Bordi (laura.bordi@tuni.fi)
Project Researcher
Tampere University
Faculty of Management and Business, Wellbeing at Work Research Group
Sustainable Brain Health Project (2020–2023) (Kestävä aivoterveys)

• Funded by the European Social Fund (ESF)
• Objective is to study and develop practices that reduce strain and support brain health at work.
• Brain health is approached through the concepts of cognitive ergonomics, information ergonomics and affective ergonomics, as well as ethics-related stress and self-management.
• Collaborators: Tampere University, Tampere University of Applied Sciences, Tampere University Hospital, Oulu University of Applied Sciences
• https://www.tuni.fi/fi/tutkimus/kestava-aivoterveys
Background: The need for information ergonomics

Increased ICT at work

→ Increased information intensity

→ Increased information processing, interruptions, task fragmentation, multi-channel communication, constant connectivity, multitasking...

→ Increased workload and stress
Example of a workday in the digital work environment

<table>
<thead>
<tr>
<th>Activity during workday (averages)</th>
<th>Organization A</th>
<th>Organization B</th>
<th>Organization C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of time spent on computer</td>
<td>74 %</td>
<td>74 %</td>
<td>73 %</td>
</tr>
<tr>
<td>Frequency of switches between applications/documents</td>
<td>36 sec</td>
<td>58 sec</td>
<td>53 sec</td>
</tr>
<tr>
<td>Number of switches between applications/documents</td>
<td>700</td>
<td>513</td>
<td>470</td>
</tr>
<tr>
<td>Frequency of switches to communication tools</td>
<td>2 min 7 sec</td>
<td>2 min 17 sec</td>
<td>3 min 17 sec</td>
</tr>
</tbody>
</table>

(Example from research project *Enhancing productivity, customer experience and wellbeing at work through information ergonomics* [2015–2017, Tekes] by Bordi, Okkonen, Mäkiniemi & Heikkilä-Tammi)
Digital work environment and stress
(measured by logging and HRV, n=36)

→ Lots of interruptions, task switches, multitasking and digital communication activities

- Shorter task sequences***
- Increased application switching***
- Higher communication intensity***

→ increased stress

***Correlation is significant at the 0.001 level

(Example from research project Enhancing productivity, customer experience and wellbeing at work through information ergonomics [2015–2017, Tekes] by Bordi, Okkonen, Mäkiniemi & Heikkilä-Tammi)
Information ergonomics in short

• An evolving part of ergonomics, focusing on the management of information load at work

• Deals with the fit between workers and their digital work environment as a whole (technology, infrastructure, social and individual factors)

• Aims to enhance wellbeing at work and productivity by reducing information load and enhancing digital work environment's role as a resource

(Franssila, Okkonen & Savolainen 2016)
Components and perspectives of information ergonomics

(Okkonen et al. 2017)
How to enhance information ergonomics in the workplace?
Promoting participatory and end-user centered approach to technology implementation and use

- Tailoring orientation and training to the needs of user groups and their work tasks
- Allotting enough time for learning
- Facilitating sharing of knowledge and best practices in technology use
Establishing shared practices and etiquette

- Which communication channels we are using, how, and for what?
- How do we handle shared email accounts or ticketing systems?
- How do we reduce unnecessary messaging in the organization?
- Could / should we determine response times?
Providing employees more opportunities to control their work

• Ensuring opportunities for uninterrupted work
• Discouraging constant connectivity
• Clear objectives make it easier to schedule and prioritize in an "ergonomic" manner.
Paying attention to one’s habits

• Do I check email / other communication apps constantly? Maybe also outside working hours?

• Do I bombard colleagues / employees / business partners with multiple messages / phone calls if they don’t answer immediately?

• Do I keep multiple documents / applications open on my computer, even if I don’t need them in the current task?

• Do I generate unnecessary communication load by messaging in a hurry and then sending two more messages to complete the first one?
Closing notions

It’s important to pay attention to the comprehensiveness of information ergonomics:

• Organization of work
• Organizational culture and practices
• Leadership
• Work teams’ conventions
• Individual habits

→ These all play an important role in managing and reducing information load at work.
References & further readings