Working in IT Projects
- Options and Limits of Work Design

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Agenda

- Introduction of the research project: objectives, approach, empirical work
- Selected findings
  - Encumbering situations and strain
  - Autonomy/job control and management control
  - Increasing burnout risk
- Options for work design
Characteristics of work in IT projects

• Project work is less pre-structured than other forms of work (problems vs. definite tasks)
• Improvisation and adaptation to changing situations (vs. well planned “best way”), structuring and planning is a part of work
• Limited duration of projects - temporary and problem oriented forms of cooperation
• Employees are in charge of several tasks related to different projects at the same time - need to individually co-ordinate
• Close cooperation and interaction with customers and suppliers

=> “How to” and project management literature, but less research on working conditions, health
Research questions

(1) Which patterns of stress or mental strain can be identified in project work and how do project teams or individuals cope with them?

(2) Is there an influence of autonomy and self-regulation on mental strain and stress, coping strategies and the development of competencies?

(3) Is there an impact of “intensive” work periods in projects on recreation and individual performance?
Projects investigated

- 7 Software development and IT consulting projects (“cases”): implementation of standard IT-systems (1), development, programming (4), web-design and hosting (2)
- 5 projects in large IT-services companies (>3000 employees), 2 in a multi-media start-up company
- Different types of project management (hierarchic – team oriented) and customer interaction (direct influence – mediated)
Approach – basic assumptions

(1) “Contradictory work demands” as driver for generation of stress and strain if options for action are restricted (buffering, negotiation)

(2) Resources: measures used and mobilised by the employees - helpful and substantial related to goal attainment

(3) Five different types of contradictions and misfits classified - heuristic model

=> Dynamic model of strain generation covering internal values and work context emphasising an active role of the employees in stress resolution

=> Providing “cues” and starting points for work design
Approach – heuristic model

Conditions of work
- Conditions of execution
- Conditions of acquirement
- Work related objectives/goals
- Individual norms and values
- Rules of the social context directed to the individual

Forms of strain
- Action regulation constraints
- Learning constraints
- Regulation constraints due to excessive demands
- Emotional pressure
- Synchronisation difficulties

Buffering
Negotiation
Restiction of options for action
Research steps – methods applied

Explorative research design:

- Semi-standardised interviews with Management/project leaders on company structure, working times etc. (N=15)
- Group interviews on present work demands, encumbering situations, solutions and constraints of work, resources applied etc.
- Self-regulation patterns investigated (“Selbstregulations-raster”, adapted from Ulich 1994): Who is to decide on what? (with 2 team members per project, N=14)
- Monthly diary on well-being and critical incidences (for approx. 1 year, adapted from Künster 1985, N=34)
- Final questionnaire on project success, wear of resources, further vocational training, relaxation, generation of social support during project
Results (1): Misfits and contradictions

92 encumbering situations identified – 83 fitted into the categories proposed, e.g.

- **Contradicting objectives as prevalent type (in all projects)**
  - “Planning dilemma” – additional wishes of the customer in the same time frame => overtime, additional work

- **Contradictions between prerequisites and execution (5/7 teams)**
  - Inadequate software (as an effect of restrictive budgeting) => additional work

- **Misfit between task and learning needs (4/7 teams)**
  - No time for vocational adjustment, missing experience of the environment at the customer => quality problems, additional work
## Results (2) Autonomy and decision on work design

<table>
<thead>
<tr>
<th>Decision area</th>
<th>Teams in large integrated projects</th>
<th>Customer-oriented project teams</th>
<th>Teams in a “new economy” environment</th>
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<tbody>
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<td>T1</td>
<td>T2</td>
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<td>planning of working times</td>
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<td>choice of work methods</td>
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<td>control of results/ output</td>
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<td>planning of work sequences</td>
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<td>decisions on staff (capacity, team membership)</td>
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<td>planning of new projects</td>
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<td>acquisition of new projects</td>
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<td>project budgeting</td>
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- Green: project team together with or without team leader
- Yellow: individual team member together with or without team leader
- Red: team leader together with or without management
- Gray: experts beyond the team
- Black: customer
Results (2): Limited design options as effect

- remarkable impact of the employees on operational aspects of work while the influence on the work environment is very limited
- in most cases, the teams and team members are not able to influence the basic settings of the project scheduling => these settings and regulations are the most restricting factors and relevant for the generation of strain
- The deviant case of project E2 is indicating that there is an option to act differently – reasons:
  1. the individual management style of the project manager in E2 is very participatory.
  2. the project manager is not avoiding conflicts with upper management or risky decisions (i.e. acting against the company internal regulations) to keep his projects going on successfully.
Results (3) Mental strain and increasing burnout risk

- Tiredness /Fatigue
- Nervousness
- Sleep disorders
- Stomach pain
- Headache
- Backache

Bar chart showing the percentage of project staff members and ISO employees experiencing the following symptoms: Tiredness /Fatigue (72%), Nervousness (58%), Sleep disorders (25%), Stomach pain (31%), Headache (31%), Backache (41%).
Results (3) Mental strain and increasing burnout risk

![Graph showing stress duration and degree of chronic exhaustion](image-url)

- Stress duration < 4 Weeks (N=6)
- Stress duration > 4 Weeks (N=25)
- Stress duration > 8 Weeks (N=20)
- Stress duration > 12 Weeks (N=13)

Degree of chronic exhaustion (1=low degree)

- p = 0.188
- p = 0.004**
- p = 0.034*

*N = sample size
**Significant at p < 0.01
*Significant at p < 0.05
Conclusions – Options and Limits of Design

• strengthening of employees’ bargaining power - introduction of organisational rules to avoid short time reaction on unplanned demands
• extended options for relaxation close to stress periods necessary – sabbaticals do not fit for that purpose
• Introduction of an assignment management for multi-project work e.g. but rising awareness (management and employees!) + company rules necessary for an introduction of a sustainable project management
Thank you very much for your attention!