

Squeezing the contractors – the production of commercial accidents

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Introduction

- Case study: construction project on a Norwegian oil refinery
- Goals for the research project:
 - Explorative examination of the interaction between the operating company and contractors firms in terms of safety

Method

- Examination of HSE-statistics
- Survey
 - 370 employees from the operating firm, main contractor and other contractor firms
- Interviews
 - 77 employees participated in single informant or group interviews

Case: The construction project

- An expansion of a oil and gas refinery
- Budget: approximately 1 billion USD
- Construction work simultaneous and within "hot" areas of the plant
- Up to 1000 employees from 47 different contractor firms working on the site at the same time

Preparations:

- The selection of main contractor was among others based on a HSE prequalification process (i.e. documented standards and historical HSE results)
- Reduction of organizational complexity by demanding a limit of only two levels of subcontractor firms on the site
- Organizational division between daily production and project

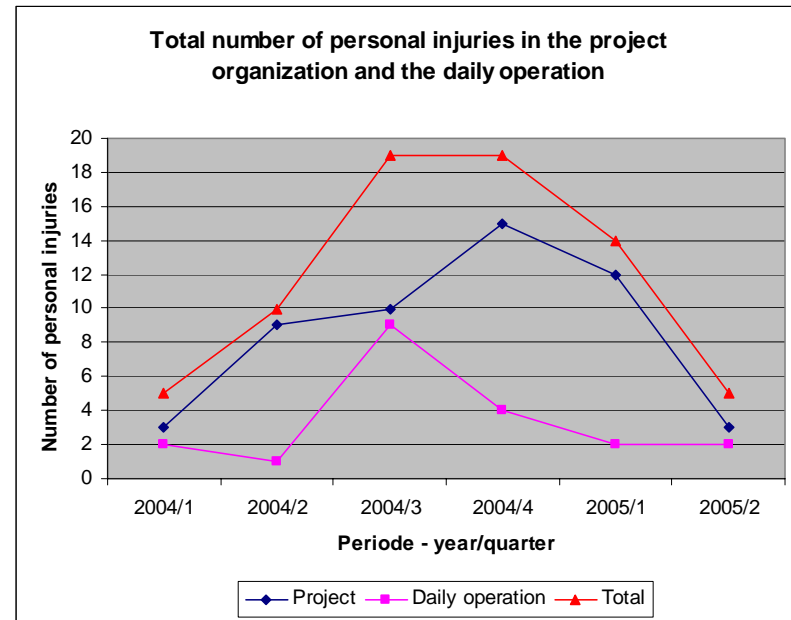
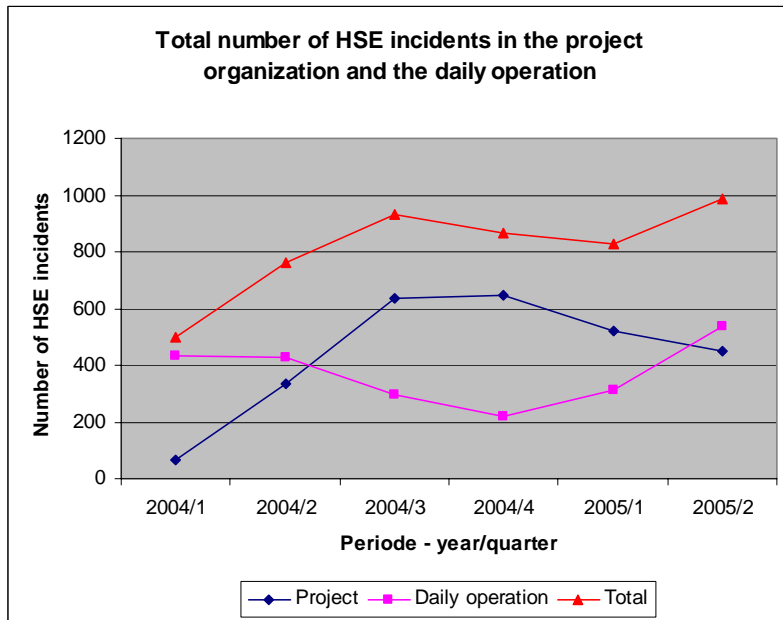
Process:

- Several delays according to the project plan were compensated by an increase in the work activity (more work were carried out simultaneously)
- The contractor firms experienced a scarcity of workers due to involvement in other building projects
- Turnover rate of 3.5
- Only 20% of the workforce were employed by the main contractor, and not 80% as assumed

Results:

- The project were accomplished in accordance to the plans
- 0.1 billion less in total cost than estimated
- More personal injuries than expected
- Several contractor firms experienced economical losses

HSE - statistics



- The numbers of HSE incidents exceeded the HSE goals for the project
- The HSE statistics indicate a relationship between work-intensive activities in the project and HSE incidents

Survey

- Measurement of attitudes and opinions regarding safety between groups of employees
 - Contractor employees with limited experience from the production plant were more positive in their evaluation of the safety level
 - Overall impression: Contractor employees with prior experience from the production plant are more align with employees from the operating company

Interviews: explaining HSE incidents

The views of employees and managers of the operating company

- Lack of skills among the contractors
- Bad attitude

“For them [the plant] is just another work site. We are talking about contractors, subcontractors, sub-subcontractors. They are just unskilled workers, due to the lack of manpower during special periods of time.”

Employee from the operating company

“When we had that major gas leak [involving the operating company], it was one of the incidents on the agenda that day. The most severe incident that day was the fact that they had caught one bicycling without glasses!” Contractor employee

The views of managers of the operating company

- Insufficient HSE pre-qualification (managers)

The views of employees of the contractor firms

- Focus on “wrong hazards”
- Events involving contractors were overly communicated compared to events involving employees of the operating company
- Discriminating behavior and distrust from the operating company towards the contractor firms
- Discriminating and poor work conditions
- Inferior work conditions compared to other construction projects

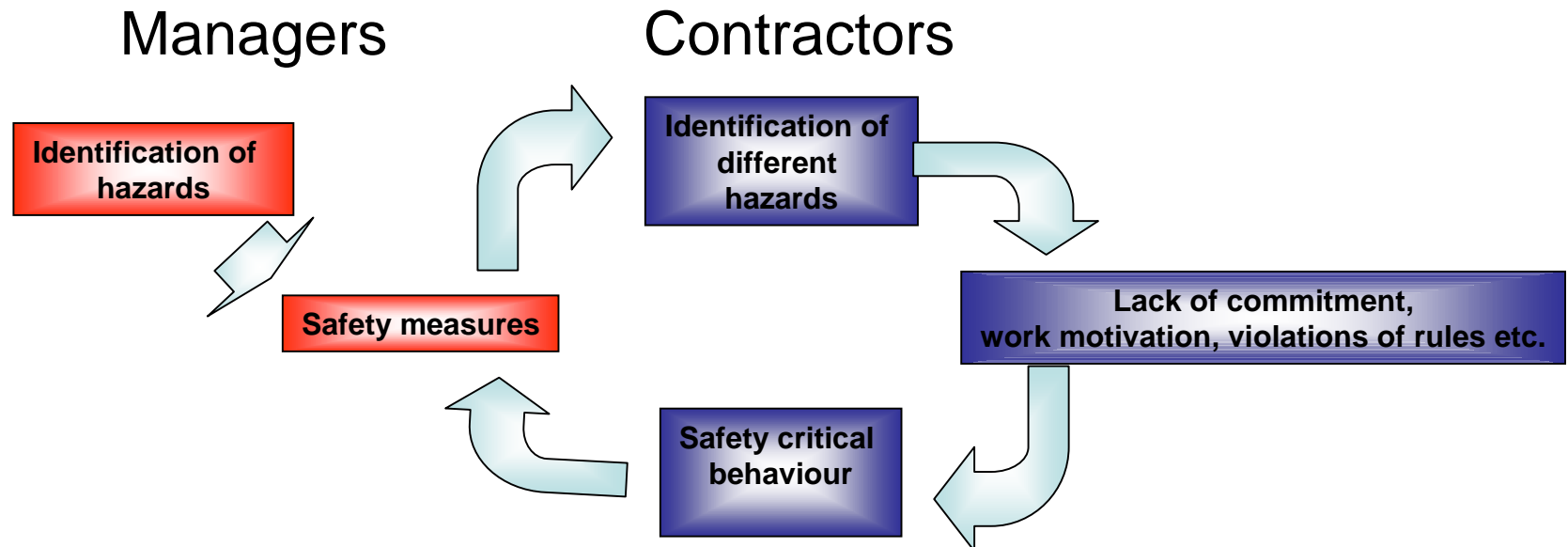
The views of managers of the contractor firms

- Limited “local knowledge”
- Lack of manpower
- Inadequate planning of the operating company
- Economical “squeezing” during the bidding process

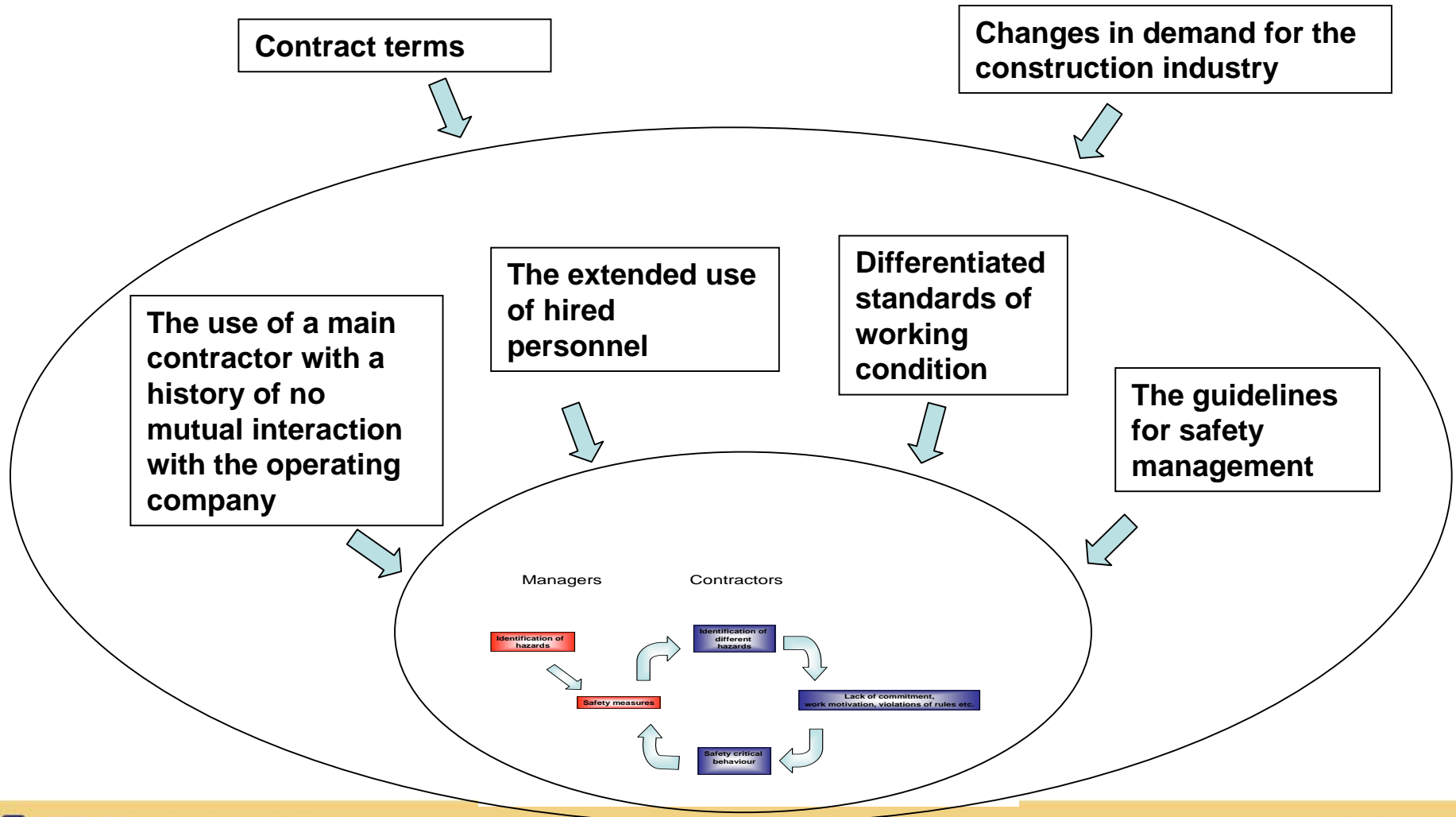
Discussion

Earlier explanation:

- An escalating distrust and decreasing work motivation and commitment towards safety measures. This was traced back to a mismatch in hazard identification and lack of interactional integration (cultural integration) of contractors and employees of the operating company (Bye & Fenstad 2006)

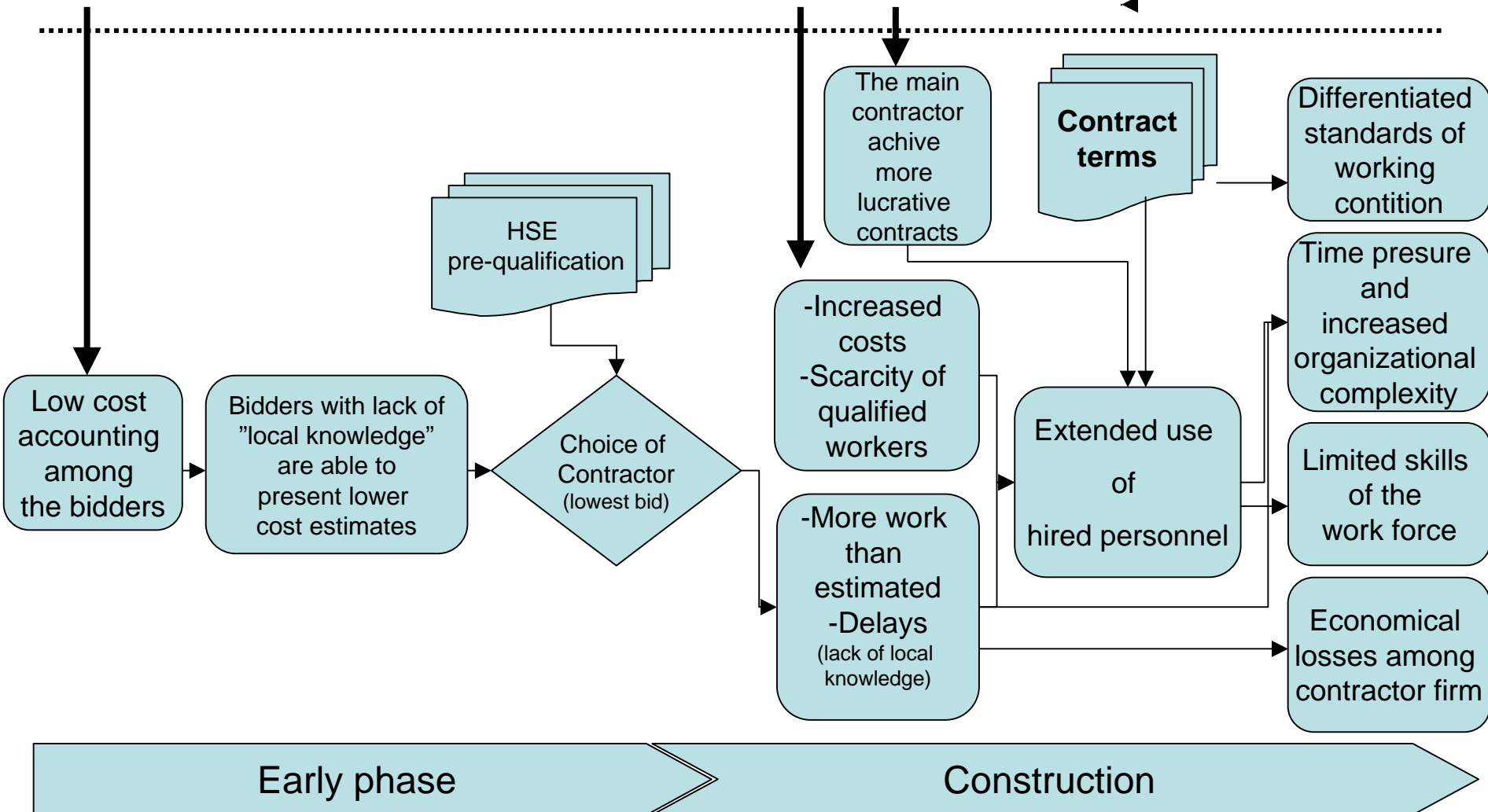


Discussion



Recession in the construction industry

Increased demand in the construction industry



Conclusions

- *Contract terms* in combination with *changes in the overall demand in this sector of business* may have had an impact on the safety level
- Lack of experience among the contractor firms with the operating organization and a specific production site may lead to:
 - Less accurate planning
 - Time pressure
 - Challenges when it comes to integrating the safety management of the operating company and the contractors

Conclusions: normative remarks

- An evaluation of tender should take into consideration whether the sector of business of the potential contractors is in recession or not, and that recession may lead to cost-reducing measures among the contractor firms that may have a impact on risk-influencing factors in the project
- HSE planning should be an integrated part of the early phase of a project
- In addition to pre-qualifying potential contractors based on historical HSE reports, earlier experience of cooperation between the operating company and potential contractors should be considered as favorable in the procurement process
- Contracts should include statements about potential safety-influencing factors such as:
 - number of subcontractors
 - accepted ratio of hired personnel
 - working conditions that are offered the workforce
 - guidelines of safety management

Number of personal injuries per million work hours (disregarding first aid injuries) per quarter in the project organization and daily operations between January 2004 and June 2005

