

LITERATURE EXAM CONSTRUCTION SUPPLY CHAIN MANAGEMENT AND DIGITIZATION (2022-201800045-1A)

Date: October 7, 2022

Time: 13.45-15.30

This exam consists of four open questions. Formulate your answers using the concepts and theories discussed during the course.

Succes!

Question 1 CSC&Digitization: a portfolio approach (24 points: 4x6)

In *Matching supply networks to a modular product architecture in house-building industry*

Hofman et al. describes a modular network that appeared to be appropriate for developing and implementing new design rules. Three types of contractor-supplier relationships could be distinguished in this network.

- a. Using Dyer's purchasing model, characterize the three types of contractor-supplier relationships in this network.
- b. Hofman et al. mentions five reasons why suppliers were unwilling to work with the new design rules in this network. Mention two of them.

In *Managing construction supply chains* Cox and Ireland provide a framework for understanding construction supply chains.

- c. Which two separate questions are according to Cox and Ireland often mixed up in the construction management literature?
- d. Cox and Ireland discuss a matrix with four different relationship management choices. Describe each of the relationships in just one sentence.

Question 2 CSC&Digitization: a governance approach (24 points: 4x6)

Laan et al. present in *Reducing opportunistic behavior through a project alliance* a case study on the role of contracts determining relationships between project partners.

- a. In the lecture on the governance approach, the governance aspects of a procurement contract were presented. What are the governance aspects of such a contract?
- b. Traditional contracts and design-build contracts are both characterized by the same basic problem. Which problem?

In *Information processing for end-of-life coordination: a multiple case study* Van den Berg et al. analyze three types of uncertainty that demolition contractors face in coordinating end-of-life strategies. One source of uncertainty is the building.

- c. Describe two dimensions of this uncertainty.
- d. Van den Berg et al. show that *task interdependencies* during demolition can be lowered by two organizational responses. Which two?

Question 3 CSC&Digitization: a maturity approach (24 points: 4x6)

In *Developing and Testing a Tool to Evaluate BIM Maturity Development* Siebelink et al.

developed a maturity assessment tool based on elements of the model of Silver et al. (1995)

- a. Describe two elements of the Silver et al. model that overlap with the criteria of the Siebelink BIM maturity model.
- b. In this study (but also in a recent BIM maturity monitor), BIM maturity and BIM use of clients or principals are relative low compared to other parties in the construction supply chain. Explain why!

In *Identifying Maturity Dimensions for Smart Maintenance Management of Constructed Assets* Johannes et al. mention several barriers and drivers of smart maintenance in service

supply networks.

- c. What do Johannes et al. mean with *information asymmetries* between contractor and customer as important barrier for smart maintenance?
- d. Explain why client leadership is mentioned by Johannes et al. as important driver of smart maintenance management.

Question 4 CSC&Digitization: a mediation approach (24 points: 4x6)

In *The impact of RFID in construction: a mediation perspective* different human-technology relations between the RFID technology and its users are discussed.

- a. Mention three human-technology relations of the typology of Ihde.
- b. Which human-technology relation dominates in construction site monitoring according to this study and why?

In *BIM mediation and users' behavior*, the Dorrestijn product impact tool is used to analyze the impact of BIM in construction supply chains.

- c. The four impact categories in Dorrestijn's framework are divided in two groups. Which two groups?

One mediation effect mentioned in this study are *before-the-eye effects* of BIM in construction supply chains.

- d. Give two examples of these *before-the-eye effects* of BIM in construction supply chains?

Total number of points to be earned: 4x24=96.

Bonus points for just being here: 4.