

LITERATURE RE-EXAM CONSTRUCTION SUPPLY CHAIN AND DIGITIZATION (2021-201800045-1A)

Date: November 23, 2021

Time: 9.00-10.45

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

Good luck!

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

In *Matching supply networks to modular product architecture in the housebuilding industry*, Hofman et al. discuss the supply network structure of a new modular housing concept of the Plegt Vos Group, a Dutch house building company.

- a. Describe this supply network structure in terms of the different contractor-supplier relations.

Cox and Ireland present in their article *Managing construction supply chains* the **power matrix** for four different power-relations.

- b. Describe each of the four power relations in just one sentence.

In *Physical distribution costs in construction supply chains: a systems approach*, physical distribution costs have been quantified for construction supply chains.

- c. Which two characteristics of a construction supply chain determine the basic structures of these supply chains?
- d. Explain the major cost trade-off identified in this model?

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

Laan et al. discuss in *Reducing opportunistic behavior through a project alliance* two basic forms of control.

- a. Describe each form of control in one or two sentences.
- b. Give an example of each form of control in the project alliance discussed in the study of Laan et al.

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 source of uncertainty as discussed in this study. Another source of uncertainty is *environmental uncertainty*.
- d. Describe two dimensions of this source of uncertainty as discussed in this study.

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 major characteristics of the Silver et al. model.

In *Assessing Buyer-Supplier Relationship Management: Multiple Case-Study in the Dutch Construction Industry* Bemelmans et al. mention *Optimize Supply Base* as one of the constructs determining an effective buyer-supplier relationship management.

- b. Describe this construct shortly.

In *Assessing Maturity Development of Purchasing Management in Construction* of Van Lith et al. the development of maturity in the purchasing function of construction firms is measured over a period of five years. In this article a framework is introduced including the six stages of development of the purchasing function of Van Weele.

- c. Describe the development of maturity in the purchasing function of the construction firms over the past five years as observed in the Van Lith study using the stages of the Van Weele model.

One result found in this article was that Building Information Models made it possible to efficiently execute operational purchasing in a more decentralized way.

- d. This finding is not in line with the development process model of Van Weele. Explain why!

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. What is meant with an *alterity* relation between RFID and its users?
- b. Give two examples of this alterity relation of RFID.

In *BIM mediation and users' behavior* the *to-the-hand* effect of BIM is an important mediation effect of BIM in construction.

- c. Explain what is meant with the *to-the-hand* effect in general?
- d. Give two examples of *to-the-hand* effects of BIM in the context using this technology in construction projects?

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

Bonus points for just being here in these heavy Covid-19 times: 4.