**THINKING THROUGH THE PLATFORM’S ROLE AS A TOOL FOR SUPPLIER NETWORK MANAGEMENT**

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**Introduction and motivation**

Our motivation to write this paper is based on VTT’s R&D work with its customers, especially the Roima Intelligence Inc. (<https://roimaint.com/>), which is developing their future software applications for their product portfolio. The platform-based business models and applications are one of the most interesting and promising development areas today.

Internet with related technologies and applications has very quickly entered the global market. Mobile technology has rabidly changed people’s way of life. There are lot of different social media platforms available for people and companies, which can be operated by different APIs[[1]](#footnote-1) and equipment remotely or locally. Many kinds of platforms have been on the market for more than 20 years. For example, Amazon.com was established 1994.[[2]](#footnote-2) Different kinds of market places are on the market today and they are becoming more and more popular among people and companies. Quite a new phenomenon is the sharing economy (SE), which has attracted a great deal of attention in recent years. The sharing economy is already transforming many sectors, including accommodation, skills and transport. It is spreading across new sectors, including food, fashion and consumer electronics, and changing the way businesses work with each other.[[3]](#footnote-3) Table 1 illustrates some examples of the Sharing Economy platforms:[[4]](#footnote-4)

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| Hospitality and Dining | CouchSurfing, Airbnb, Feastly, LeftoverSwap |
| Automotive and Transportation | RelayRides, Hitch, Uber, Lyft, Getaround, Sidecar |
| Retail and Consumer Goods | Neighborgoods, SnapGoods, Poshmark, Tradesy |
| Media and Entertainment | Amazon Family Library, Wix, Spotify, SoundCloud, Earbits |

Table 1: Different kind of Sharing Economy platforms

Development of the industry-related platforms are at the very beginning phase. In this paper, we concentrate on platform ideas for supplier network management.

**Industry-related platforms**

There are a number of different classifications of the industry-related platforms. Based on many sources and discussions, we created the following classification in Table 2.

According to Sean T. Monahan, the hot term today is “The Rise of Supply Chain Platforms”.[[5]](#footnote-5) He says that platforms create synergies in two ways. First, platforms provide us­ers with sets of standardised tools and processes. Second, platforms allow us­ers to create and harness mutual synergy from one another.

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| **Type of the platform** | **Meaning** | **Commercial examples** |
| Collaboration platforms | Platforms for online collaboration between people and teams. | ProofHQ, Wrike, 9teams, Wrike, Zoho Docs, Tallium, Sharepoint |
| Communication platforms | Information sharing, negotiations, discussions and discussion libraries.  | Evernote Business, Slack, Basecamp, Yammer, Office365, Glip, Skype, GoToMeeting, TeamViewer |
| Content-sharingplatforms | Content sharing between people and companies | Dropbox, Microsoft OneDrive, GoogleDrive |
| Project managementplatforms | Project management and coordination between companies. | Clarizen, Workfront, dapulse |
| ERP - portals | Extensions of companies’ ERP systems to distribute information to their business partners. | SAP, Microsoft Dynamics AX, IFS, Oracle Fusion, Epicor |
| UnclassifiedSCM-applications | Applications for SCM and content sharing. | Jakamo, HGI, Team Center Supplier Integration, Plex |

Table 2: Supplier network-related platform types.

One of the important papers is Accenture’s description of Platform-Driven Business models (Accenture 2016). They say that by embracing the transformational power of platforms, enterprises across all industries are capturing new growth opportunities and changing the way they do business. And it’s these new business models and the ecosystems being built around them that are driving the most profound change in the global macroeconomic environment since the Industrial Revolution.

**Communication in practice today**

Communication and Information flows are the most important issues when managing everyday business. Communication is needed inside every company and between every company to manage and synchronise the manufacturing and logistics operations with related activities.

There are many different communication methods in use. Some of them are: 1) phone, 2) email, 3) SMS messages, 4) social media, 5) extranet, 6) visits, 7) meetings, 8) Skype meetings, 9) video meetings, 10) collaboration platforms and 11) traditional post.



 Figure 2: Communication between companies

The everyday way to communicate between companies is the extranet[[6]](#footnote-6) (Figure 2), which is widely used in industry. It is a [website](https://en.wikipedia.org/wiki/Website) which allows controlled access to partners, vendors and suppliers or an authorised set of customers. It is normally used for a subset of the information accessible from an organisation's ERP.

Additionally, there are many people in every company communicating with each other across companies. These companies are very often located in different countries, which means that there are several different concept systems due to the different languages and cultures.

The communication system today is very complex. However, due to the versatile collection of communication methods, it is always easy to find one which is specifically suited to a certain communication situation. Requirements for the future platforms are very demanding and probably not easy to meet.

**Theoretical viewpoints**

In order to get a more general view to the supplier network management phenomenon, we take a transaction cost theory as a base for our thinking.

This chapter is mainly based on the author’s dissertation (Häkkinen 2008).

As Williamson (1985 p. 2 -19) says, the transaction cost approach maintains that economic institutions have the main purpose and effect of economising on transaction costs. Transaction costs are the “costs of running the economic system”. Such costs are to be distinguished from production costs. He compares transaction costs to the friction in a mechanical system in which transaction costs are the economic equivalent of friction in a physical system.

The most important dimensions of transactions may be identified as:

1) Complexity, 2) frequency of occurrence, 3) duration or continuity, 4) uncertainty, 5) measurement and monitoring features and 6) implications for interlinked transactions.

Rao (2003) continues; among these, some features run in parallel: asymmetric information and incomplete specifications of transactions and their commitment implications. The sources of transaction costs between seller and buyer are illustrated in Figure 3 (Häkkinen 2008). In order to draw

Figure 3, there is a concept of “Communication solution”. “Communication solution” means all of the resources and information usage related to the transaction in question.

Figure 3 illustrates the sources of transaction costs between seller and buyer. The dimensions of transaction are closely connected to the transaction. Their existence and nature determine the design of the communication solution. The second critical gate is the “quality of information” between parties. If the quality of information is symmetrical and all of the specifics during the transaction are perfect, the transaction costs are low. In the opposite case, they are high.

The second path to generate transaction costs is based on the bounded rationality, opportunism and asset specificity needed. These three sources can be seen as largely independent of the sources which are based on the dimensions of the transaction.

Transaction costs are dependent on the nature of the transaction. In the case of subcontract manufacture, we can find many kinds of cases, from simple to very complicated ones.



Figure 3: Sources of transaction costs between seller and buyer (Häkkinen 2008).

We think that the transaction cost view is the most valuable when designing the supply chain system. Manufacturing costs in the manufacturing companies are what they are. They are independent of the supply chain system binding the business partners together. A certain amount of the transaction costs is needed. Otherwise, there is no business at all. The challenge is to find the optimum level of the transaction costs. In this paper, the idea is that the collaboration platform could make the communication more effective and in so doing, decrease the transaction costs (Table 3).

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| **Transaction cost sources** | **How the communication platform can support TC decrease (a very tentative list of issues)** |
| Quality of the information symmetry | Platform can be a centralised information storage, where all the business partners can find needed up-to-date information anytime and anywhere. |
| Quality of the specification of transaction | Platform can give good support for every kind of document changes and in doing so, maintain correct information everywhere. |
| Bounded rationality | Platform can be an “extension of the human brain”. It can store many things in the memory and it may help to solve problems by using different kinds of algorithms. |
| Opportunism | Platform may have some kind of programmed mechanisms to control people and company operations to prevent opportunism. |
| Asset specificity | Platform may have some applications to control the usage of certain investments and other assets.  |

Table 3: Transaction cost sources

**Collaboration processes in the supplier network management**

We use the following collaboration processes between suppliers and principals (Häkkinen 2008) as a framework for this paper (Table 4):

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|  **Collaboration process** |  **Short explanation** |
| Supplier / principal selecting process | Companies try to seek best possible business partners. |
| Concurrent engineering process | Both of the business partners are willing to collaborate in the product design phase. |
| Quality assurance process | Principal’s market put certain product-related quality pressures, which flow to the suppliers’ operation. |
| Logistics process | All the physical facilities needed to stock, transport and manage the material flow from the supplier’s plant to the principal’s address including the order-delivery process.  |
| Manufacturing planning and control process | Balancing both parties’ manufacturing capacities with each other. |
| Financial process | All the money-related activities as invoicing and funding of investments and stocks. |
| Contract and order process | The six previous processes have an influence on the product cost and price.  |
| Management of the processes above | Many changes happen all the time and both business parties’ operations need continuous adjustments based on mutual planning and decision making. |

Table 4: Collaboration processes between suppliers and principals (Häkkinen 2008)

All of these processes in Table 4 require considerable information flow to be managed successfully. These processes are the activities that produce a specific output of value to the customer. According to Cooper et al. (1997), the communication system is a key to success. The kind of information passed among the business partners and the frequency of information updating has a strong influence on the efficiency of the supply chain.

**Platform based collaboration model**

Figure 4 illustrates the future platform-based operation model in supplier network management. It is an imagination of the possible future collaboration model.



Figure 4: Platform-based operation model

The model in Figure 4 seems to be simple, but there are a number of open questions concerning the model. Some of the practical questions are:

* Who are the platform operator and platform developer?
* How is security and data integrity managed?
* Can the platform eliminate companies’ extranet and possible other applications?
* How is the data movement between the companies’ ERP thought to be?
* What kind of functionality does the platform have (data transfer, data storage, information creation, intelligence, etc.)
* Is it possible that the platform can help managers make better business decisions?
* How are the technical questions managed?
* Is the platform based on open or closed architecture?

Those open practical questions are only a small set of possible problems. And so the platform idea offers a very interesting area for academics and practitioners.

**Thinking through the possible R&D issues**

The different kinds of information flows between business partners need to be discovered. These information flows are the main base for platform conceptualisation. Some of the possible research issues could be:

* What are the possible use cases to be supported by the platform?
* What kind of APIs and equipment are used in every use case?
* What amongst the information flows are suitable for the platform?
* What kind of intelligence could the platform have?
* Is there a possibility to create a new kind of supplier selection method by using the platform?
* Is it possible for the new supplier candidates to join the game?
* Are there new kinds of possibilities for the companies to increase joint development collaboration?

Transaction theory is a strong basis for future research. Distinguishing the transaction costs and production costs form each other is important. Because of the globally distributed production networks, the management of the transaction costs is becoming an increasingly more important issue. That is why we think that transaction cost theory-based cost calculation models need to be developed for the networked operation model.

**Finally**

There is a gap in the scientific discussion in this area. The platform idea is quite new in supplier network management and so it needs more academic attention. The practitioners have only limited opportunities to develop platform-based operation models without academic research.

In practice, we can imagine very many new operation models, but they are only products of our imaginations. After the real pilot cases, there is more evidence to see the real possibilities of the platform models.

The traditional Supply Chain Management concept is possibly reaching the next development stage. There is an adage “Supply chains compete, not companies”,[[7]](#footnote-7) which needs to be analysed and challenged more in the future. The platform idea may mean a new kind of supply chain configuration and dynamics between business partners.

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1. API = Application Programming Interface [↑](#footnote-ref-1)
2. See https://en.wikipedia.org/wiki/Amazon.com [↑](#footnote-ref-2)
3. https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/378291/bis-14-1227-unlocking-the-sharing-economy-an-independent-review.pdf [↑](#footnote-ref-3)
4. https://www.pwc.com/us/en/technology/publications/assets/pwc-consumer-intelligence-series-the-sharing-economy.pdf [↑](#footnote-ref-4)
5. https://supply-chain.cioreview.com/cxoinsight/the-rise-of-supply-chain-platforms-nid-9907-cid-78.html [↑](#footnote-ref-5)
6. See https://en.wikipedia.org/wiki/Extranet [↑](#footnote-ref-6)
7. E.g http://www.martin-christopher.info/publications/logistics-and-supply-chain-management [↑](#footnote-ref-7)