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Win-Win collaboration, functional product challenges and value-chain delivery: A case study approach

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Abstract

Functional products (FPs) comprises of integrated hardware, software, and a service support system components that are bundled together to offer higher customer value and possibility to generate revenue. However, offering FPs requires forming and managing win-win collaboration with diverse global value-chain organizations. Based on twenty explorative interviews at two Swedish manufacturing companies, we specifically focus on the collaboration between FP provider and its value-chain delivery organizations. Our result shows that such collaborations can lead to win-lose or lose-win situations. Furthermore, we identify six diverse relational challenges which could negatively influence the collaboration between FP providers and their value-chain delivery organizations.

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Keywords: *functional product; product-service system; business models; collaboration; win-win; service delivery network; value creation network; routines*

1. Introduction

Manufacturing companies are faced with increased global competition, reducing product margins and introducing a greater need for product differentiation t
advantage [1, 2, 3]. This has motivatec
from being product providers to product-
providers [4]. It is widely agreed that for successfully delivering functional products (FPs), a closer collaboration between global value-chain delivery organizations (e.g. dealers, service partners) is imperative [2,3]. Much of the prior literature takes it for granted that this represents a "win-win" situation for the FP provider and their globally distributed delivery partner companies. However, emerging literature has recently begun to indicate that partners involved in collaboration may act opportunistically or engage in counterproductive activities, leading to "win-lose" or "lose-win" situations [5, 6]. We address this problem area by examining to what extent FP providers are able to establish win-win collaborations with their global value chain organizations.

Functional products are viewed as complex product-service

organization to solely provide FPs. In contrast, FP providers typically need to engage in collaboration with several partners within the upstream and downstream value chain. This can results in challenges as different partners have diverse organizational characteristics, positions in the value chain, and incentive models [6, 10]. Moreover, as the partnering organizations often are globally distributed, additional relational issues due to international differences may negatively influence the collaboration outputs.

Therefore, we initiate this study with the purpose to explore relational challenges that can negatively influence the

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likelihood of "win-win" collaboration between FP providers and their global value-chain delivery organizations as they attempt to offer FPs. This enables us to extend the emerging literature on FPs in two ways. First, we provide insights based on considering a dyadic view on challenges with FPs provision. Although, prior studies have highlighted the need for investigating the dyadic challenges [2, 6, 10] studies in this domain remains scarce. Second, we propose that value-chain delivery organizations for FP providers are globally dispersed, thus demanding additional insights about the complexities of FP provision [11]. Such a global perspective has been largely neglected by most prior studies. Based on explorative qualitative data from two Swedish manufacturing companies we attempt to address the stated purpose.

2. Literature Background

2.1. Functional Products (FPs)

Different literature streams have attempted to understand the transition of manufacturing companies becoming more product-service oriented as compared to focused on selling only physical products. For example, studies on product-service systems [12], industrial product-service systems [10], and servitization [13], are some well-known literature steams in this regard. However, a related but conceptually distinct view is captured under the heading of functional products (FPs), which is the focus in this study [9]. According to Brännström (2001) [14], a functional product is defined as "a product, not necessary a physical artefact, consisting of any combinations of hardware, software, and services, being sold for the purpose of supplying a function. Thereby meeting all agreed upon needs of the partner whose primary role is that of a customer". Building on the above definition, other researches within the field of FPs have acknowledged five distinctive or partially unique characteristics associated with FPs.

- FPs comprises of integrated hardware, software, and a service support system. Inclusion and emphasis on software component is largely unique to FP literature [7].
- Offering of FPs are largely related to business to business (B2B) settings rather than business to customers (B2C) settings, which highlights and delimits its relevance for certain specific industrial contexts [15].
- Although not unique but still a distinctive characteristic of FPs, these offerings put greater importance on intimate risk and revenue based collaborations between upstream and downstream partners that are part of developing and delivering FPs [4].
- FPs can be expected to have a lifecycle of up to 30 years [8], which further make it distinct from other existing short contracted add-on product-service concepts.
- Finally, in most cases a FP provider retains ownership of the hardware in an effort to offer a specific function or availability for the contracted duration. These types of complex offerings are not widely discussed under other literature streams.

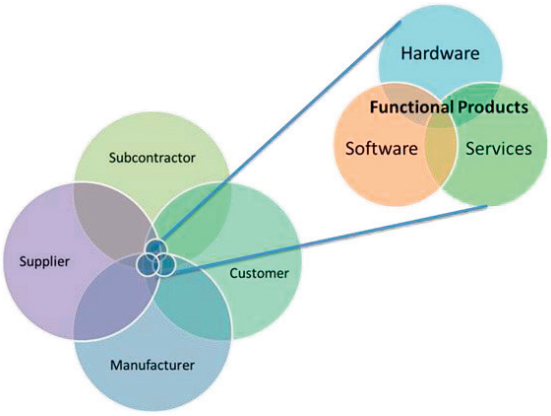

Figure 1: Illustration of functional products (adapted from Lofstrand et al [15])

Figure 1 provides an illustration of how a FP provider (e.g. a manufacturer) in collaboration with other partners from the value-chain offers FPs which is a combination of hardware, software, and service components [15]. Most studies acknowledge that offering FPs can provide opportunities for manufacturing companies to create product differentiation, a steady stream of revenue, a greater market share and other potential benefits [4, 7]. A study by Alonso-Rasgado and Thompson [16] highlights total care products which can be viewed as FPs across difference industries due to five distinctive characteristics namely, (1) customer- defined support levels, (2) life-cycle costs, (3) sustainable hardware design, (4) availability, and (5) development of product knowledge in use. Well-known industrial examples of FPs illustrating how the above discussed characteristics may be translated into reality are Rolls-Royce in aero-space industry offering a flagship of services under the label of total care, Bosch Rexroth in industrial hydraulics industry offering availability of torque, and Caterpillar in construction equipment industry providing customer support agreements which guarantee hours of operations for a contracted duration. All these examples can be viewed as FPs as they are complex solutions consisting of hardware, service and software components.

2.2. Global Value Creation Network for Functional Products

FPs requires collaboration between different actors from the value-chain network and in some cases this leads to the development of an extended enterprise that works together to develop and deliver FPs. According to Meier et al [10], industrial product-service offers requires a new form of value-creation network where roles and responsibilities are significantly revised. As value-creation network partners attempts to engage in offering FPs, they assume greater risks. This of course also provides the opportunities for collaborating partners to move up in the value-chain, generate additional value, and secure the possibility for greater revenue generation [7, 10]. This generally depicts a positive view towards establishment of a value-creating network where all partners would benefit from such an engagement. However, such an uncritical and over-optimistic view is rooted in

limited empirical studies. In this study, therefore, we attempt to examine this assumption by testing to what extent the partners involved in the value creation network actually achieve win-win collaboration as they offer FPs.

Recent studies have shown an increased interest in the role of upstream production network in the context of FPs, while only a limited number of studies have attempted to understand the downstream interface between FP providers and customers [17, 18]. According to Schweitzer and Aurich [19], such a service delivery network comprises of service branches, service locations, and dealers (see figure 2). This network is responsible for the delivery of the FP in cooperation with customers, throughout the product life cycle. Thus, branches, service partners or dealers can be regarded as the "middlehand" in an extended value creation network, linked forward to customers and backward to FP providers. Managing such relations can be quite challenging. Indeed, prior studies have highlighted challenges related to information sharing [7], development of incentive models for partners [6, 20], communication problems [21], and opportunistic behaviour [6]. Another influencing aspect that has been largely overlooked in prior FP studies is linked to the global dimension of FP delivery [11]. As most FP providers are multinational companies that operate in different countries, they need to manage intra-organizational as well as inter-organizational relations with a diverse set of actors in the global value-chain. Thus, if relationships with global delivery organizations are not effectively managed, it can lead to significant financial losses and risk of losing competitiveness.

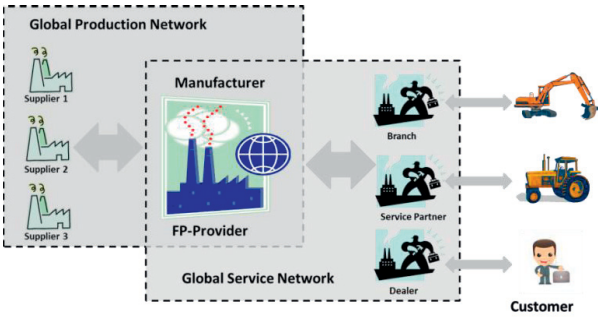

Figure 2: Global extended value creation network (adapted from Schweitzer et al [19]

Based on the discussion above, our aim is to explore such relational challenges by adopting a global value-chain delivery organization perspective on FP collaboration. Recent studies have attempted to build knowledge in this direction but our literature review highlights a lack of studies specifically focused on the FPs context. In the next section, we describe our case companies and the research methods that provide the empirical base for our study.

3. Methodology

3.1. Research Context

The present research involved two manufacturing companies based in Sweden. The first case company, Alfa, has approximately 13,000 employees and a turnover of US $ 1,712 million (2010). They are one of the world's largest manufacturers of construction equipment. Alfa sells and markets its products in 150 countries and has significant operations in Sweden, Germany, France, the US, China, Korea, and Brazil. The second case company, Beta, has approximately 500 employees and a turnover of US $ 141 million (2011). They are manufactures of press hardened automobile parts, such as doors, bumpers, and body parts. Beta is located in Sweden and is part of a large global corporation headquartered in Spain. Beta provides products to customers in Europe, North America and Asia.

Both case companies hold the ambition to become front-runner companies in their respective industries thorough offering FPs. The specific projects we focused on during our study in each case company are quite unique. In Alfa, we identified a FP offer which entails providing availability of equipment for a certain number of operational hours. For example, there were cases when Alfa in collaboration with its dealers offers up to 92% availability of their construction equipment. To provide this FP offer, Alfa need to use value chain delivery organizations, that are dealers, they are spread across global markets. The design and development of the offer is primarily undertaken in Sweden. But for FP delivery, internal regional and local units specific to the global markets were also involved to support regional and local dealers. In the case of Beta, we identified a FP offer which included providing "a certain number of strokes" or availability of a tool for an agreed duration with a specific number of outputs. For example, 100,000 strokes could be offered during a period of two years. The tool could be placed within globally distributed internal press hardening factories in Asia, Europe or North America, but the tool would be owned by a specific automotive OEM. So in the case of Beta, internal supplier factories act as the global value chain delivery organizations and the OEMs act as the customers.

3.2. Research methods and data analysis

We adopted an inductive and exploratory multiple case study research design, because we wanted to obtain a rich data set and detect the underlying dynamics of the phenomena under investigation [22, 23] To gather relevant data, we performed individual personal interviews at site in Sweden. In total, 20 detailed interviews (12 interviews in Alfa and 8 interviews in Beta) were undertaken during two phases.

The first phase focused on understanding the current FP strategy and identifying a FP offer for more detailed investigation in the case companies. For this purpose, we undertook five explorative interviews in Alfa and two interviews in Beta with respondents from top management that were either driving internal efforts in this direction or had a holistic view on the company FP strategy. During the

second phase, we focused on the two FP offers. More specifically, we explored questions related to offer development, the role of value chain delivery organizations, and which challenges or opportunities were encountered with FP delivery. We conducted seven semi-structured interviews in Alfa and six interviews in Beta with respondents from middle management level engaged in developing and delivering the FP offers.

The interviews ranged from one to three hours, with an average of one and a half hours. To ensure reliability, most interviews (80%) were conducted by multiple investigators. Most interviews were also recorded, however due to sensitivity of the topic for the case companies, we sometimes were not allowed to record the interviews. The interviews were transcribed within 48 hours and then discussed within the group to identify relevant patterns or themes [24]. The collected information was inserted and displayed on a spread-sheet enabling for us to find patterns, which might have been difficult otherwise [25]. To further increase reliability by enhancing transparency and the probability for replication, a case study protocol was constructed together with a cast study database. This included case study notes, documents and analysis. Secondary data were also collected during the data collection period, either in the form of observations or archival data. Thus, through using interview data and secondary data from different sources, we have attempted to establish evidence triangulation [26].

4. Results

4.1. Win-Win vs. Win-Lose or Lose-Win

During interviews in the case companies, it was established that it is not always simple to reach win-win collaboration between FP providers and service network partners. According to a respondent from company Alfa, “it is easier for us to evaluate and develop offers that will generate value for our customers, but we don’t always understand what will motivate our dealers to participate in this”. Another respondent from company Beta states, “like our customers, our service network needs to be globally active, this is something that adds to the complexity of offering FPs and reaching a common incentive model”. However, there were examples when certain groups of service network partners could foresee benefits with engaging in offering FPs and were more open to take additional risks in exchange for greater revenue generation possibilities. A project manager from Alfa stated, “some of our dealers are more open towards offering services. They are typically in Scandinavia so it is easier for us to communicate with them and establish an agreement for jointly offering product-services”. According to a head of department in Beta, “we need to approach offering FPs to global markets in a progressive way. Maybe we should do some tests first with our geographically close service network partners. Once we have established a successful case, we can surely motivate others”

When specifically exploring events where win-lose or lose-win had occurred, we found a few examples. A manager from Alfa stated, “we have had a few cases when our global dealers have used our product-service agreements as the base for developing their own customised agreements with customers, which is not in our interest. This has even sometime lead to financial losses for us”. According to a respondent from Beta, “sometime our internal service delivery partners press us to be more cost-competitive. In such situations, reaching an agreement for offering value-oriented FPs is challenging”. Thus, both case companies had experienced situations with a likelihood of win-lose or lose-win situations.

4.2. Challenges Related to Global Value Chain Delivery

Our respondents acknowledged that their ambition was to offer FPs globally, implicating an engagement with value-chain delivery organizations from different parts of the world. This was generally perceived as a problem because developing FP offers which would be globally competitive across diverse markets and regions is a challenging undertaking. However, based on our analysis of twenty explorative interviews, we were able to identify six prominent relational challenges that can negatively influence the probability of establishing win-win relationship between FP providers and theirs global value chain delivery organizations.

4.2.1. Distance from global markets

For both case companies their FP development units were based in Sweden. Although these units had other internal counterparts in other regions and hubs, they still had an indirect connection to service delivery organizations, such as dealers. According to a service development manager from Alfa, “we are a global organization with business in more than 150 counties, and it’s very challenging to have FP insights about all our markets. It is possible that we develop offers which are not meeting certain market conditions”. Another respondent added, “in certain markets no one wants to sign contracts as they don’t like legal documentation. So how shall we form an FP agreement?” Clearly national, cultural and customer-specific behaviours were different and the FP development units needed to take these diverse inputs into consideration, if they would like to have any chance to develop a globally competitive FP offer. Some respondents from Beta believe that one way to manage this distance was to establish new service delivery offices and recruit new employees that are globally active.

4.2.2. Alignment of incentives

Most respondents agreed that a central condition for offering FPs was to have an incentive model which would be attractive for all the parties involved. According to a respondent from Alfa, “we need to understand our customers and our service organizations needs and interests to be successful with FPs delivery”. A respondent from Beta added, “we need successful cases which will serve as a catalyst for motivating other service delivery partners to get involved with us in FPs offering”. It was also suggested that certain market segments were more attractive for offering FPs as compared to others. For example, China were new factories (i.e. delivery unit) are being established, the need for Beta’s FP offers (i.e up-time oriented offer combined with training) would be more

attractive as these factories would lack internal competence and have willingness to pay premium price for FPs. Several respondents also linked this discussion to the need for specific FP business models. They argue that new types of business models were needed with greater emphasis on alignment of incentives with delivery organisations and generation of greater value to customers. A project manager stated that "we are looking for a suitable business model but it's not very clear yet. We need more clarity regarding this".

4.2.3. Intra-organizational restructuring

As with any organizational transition, internal restructuring is necessary to promote change. According to a respondent from Alfa, "our delivery organizations are still product-oriented and for them FPs is not the core business. They want to sell products". Another respondent added that "this creates organizational structural barriers for us to effectively deliver FPs". Respondents from top management positions agreed that they needed to significantly restructure internally before they would start to promote changes with service delivery network partners. According to a project manager, "we need also new employees with service development and delivery competences. In some cases we need to have more service oriented resources at our global regional units to secure service delivery and control". Thus, offering FPs not only required revising but also in certain cases building new units to secure successful delivery of FPs.

4.2.4. Diverse service delivery partners

According to most respondents, it was clear that service delivery partners were different and could not be treated identically. In the case of Alfa, their global dealers were sometimes new and sometimes old, with several or few employees, with high or low competences for service delivery. A respondent explained that "our dealers are not the same, some are owned by us whereas other are independent. We need to work with all of them and move in a direction where we all can gain, but this is challenging". Another reference was made to the financial power of the dealers as some could sustain high capital costs for delivering FPs while others could not. Clearly, such difference between service delivery organisations leads to relational challenges, which means that FP providers cannot adopt a standardized strategy to manage relationships.

4.2.5. Life cycle considerations

FPs are not only complex offers but also risky as the FP providers and their value creation networks as that together take the responsibility to offer certain functions over a contracted duration. Respondent from Beta explains: "It is more risky as we take more responsibility for a long duration to offer availability". Furthermore, both companies were not familiar with adopting a life cycle perspective into consideration when offering FPs. Such a long-term commitment was not limited to the case companies but also had impact on the service delivery organizations, as they feared being locked in into a certain agreement which could be fatal. According to a respondent from Alfa, "we should be more open towards involving new partners. There are issues with FPs offerings which are new to us, like taking a life cycle perspective. We have only recently started to think about this". Thus, taking a long life cycle perspective could mean an opportunity as well as a relational challenge for a FP provider and its global value chain delivery organization.

4.2.6. Lack of routines for managing the global value chains

All respondents agreed that new routines were needed to become a successful FP provider. According to one respondent, "we need new processes, so that we may improve our internal communication within the organizations and with our partners". Another respondent added that "in service organizations, we need routines to develop partner knowledge, so that we can motivate and communicate value to our delivery partners and customers". Such routine was regarded to be important because without advancing the understanding about the company's service delivery partners and customers, developing a competitive and compelling FP offer was not feasible. Finally, certain respondents also mentioned the importance to build relational skills to effectively manage relationships and ultimately build a win-win relationship by promoting trust and information sharing with service delivery organizations.

5. Discussion and Conclusion

This study was initiated with the purpose to explore relational challenges that can negatively influence the likelihood of "win-win" collaboration between FP providers and their global value chain delivery partners as they attempt to offer FPs. To this end, our exploratory study of two case companies indicates several relevant findings. First, we contradict the prevalent view that offering FPs or similar product-offers naturally results in "win-win" collaboration between FP provider and delivery network organizations. Our results show examples of "win-lose or lose-win" situations, as few dealers exploited the ambition of Alfa to meet their own interests, as they were unable to foresee their own benefits with FP engagement. This suggests that securing interests of delivery network organizations and focusing on mitigating relational challenges is critical for offering FPs successfully. Second, most prior studies have largely overlook the global dimension of offering FPs. Large companies like our case companies, offer product and services in diverse global markets and each market they interact with different customer segments. Inclusion of global value chain perspective is equally necessary and relevant for future understanding on how to form win-win collaboration. Third, based on taking global value chain perspective, we are able to identify six prominent challenges which based on our analysis pose the greatest barrier to FP provision. They are linked to managing relations over great spatial and cultural distances, to balance contributions and rewards from partners in the value chain securing long-term win-win relations, to handle a great variety of different partners referring to size, competence, and ownership, to take life-cycle perspective into consideration and to revise the existing routines. The impact of identified relational challenging can vary depending upon the case, but focusing on mitigating them is necessary. In particular, we

find support for two strategic actions. First, to handle such risks FP providers require revised or new business models clarifying how the value created and distributed is needed. Second, we find that developing new routines for sharing information, partner knowledge, process-related competence, relational skills are needed as a complement to new FP business models requirements.

In conclusion, we argue that development and delivery of FPs is a complex assignment involving long-term commitment with higher levels of risks and responsibilities. This means even large companies with pool of resources need to form collaboration with global value chain partners, but such relationships are hampered by several relational challenging. In this study, we make an initial attempt to understand these challenges and by doing so design action for mitigating them and ensure win-win collaboration.

Although, this study builds on two explorative case studies and does not hold the ambition to generalize its results, we would like to encourage FP researchers to further explore how global value chain organizations can establish win-win collaboration. Second, our results have identified the need for better understanding of business models and routines for promoting effective collaborations. Future researchers are encouraged to explore these two areas further. Finally, such research efforts would benefit from utilizing both quantitative as well as qualitative research designs.

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