Contracts: "*Help Wanted*" to deliver Advanced Services

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Keywords: Advanced Services, Servitization, Contracts, Costing, Pricing, Research Agenda

Abstract

Technology-supported business models, such as Product-Service Systems, Servitization, and Advanced Services rely on the co-creation of value that emerges during engagements between customers and suppliers. This value must be clearly identified in order to be clearly communicated. However, recent research illustrates the evolution of co-created value over the life of the engagement, which leads to poor alignment between the proposed value proposition and the contract that delivers the service. Failure to produce and utilize comprehensive contracts can lead to relationship failure. Existing challenges to delivering advanced services noted in the literature tend to focus on creating and delivering the value proposition. Practitioners often find difficulty in capturing the nuances of an evolving value proposition in a viable contract.

This research uses mixed method approaches to identify and explore the contract areas that currently require additional research focus in partnership with practice. Insights into the most pressing challenges for advanced service contracts were elicited through surveys and a sandpit-style workshop attended by both academics and practitioners with experience in buying, selling, and delivering advanced service value propositions. The paper proposes an early research agenda for this area, providing direction for researchers and practitioners for developing contracts that deliver Advanced Services.

1. Introduction

Through the efforts of practitioners and researchers, we understand that delivering a new offering like Product-Service Systems (PSS), Servitization, and Advanced Services (AS) requires the identification of co-created value in the value chain [1][2]. Co-created value emerges from a relationship with enhanced trust and communication in information sharing [3]. Contracts to deliver services are widely based on traditional models of value in exchange, whereas new models focus on value that is co-created during the engagement (or value in use) [4]. As a result, a poor fit may be created between the emerging and evolving value proposition and the contract supporting the engagement [5]. Identification of contract-based challenges currently facing practitioners is needed to direct research efforts to help overcome those challenges. A more mature understanding of those challenges can facilitate adoption of PSS/Servitization/AS models.

The research question at the heart of this project asks, in what areas are traditional contracts and agreements insufficient, given that the value created through advanced service business models is known to evolve? We hope to better understand how the innovative delivery of advanced services is failing to be contained by traditional agreements.

Addressing this question would provide helpful direction for a research agenda for the growing area of advanced services. The order of this paper first presents the background and practical impact of advanced services. Then, extant research is presented to illustrate the broader areas of challenge already identified in the development and implementation of advanced service business models. Given the relatively recent emergence of advanced services, it was felt that a review of the extant literature alone would be of limited insight for the identification of challenges in contracts associated with such services. We therefore engaged with practitioners and academics currently in the process of implementing advanced services to identify the emerging real-world challenges associated with contracts in this area. Finally, a set of topic areas related to the development of contracts for advanced services are presented as direction for future research efforts.

2. Background

Manufacturing firms are increasingly moving from product sellers to product service providers [6][7], allowing them to provide unique value propositions and giving them a competitive advantage [8]. The transformation of manufacturing firms moving towards selling PSS offers them the opportunity of selling advanced services, which can be complex performance or outcome-based services [6]. The current trend of digitalization in Servitization [9] provides more opportunities for manufacturing firms to provide

advanced services using digital technology [10]. A recent publication [5] discussed the long-term nature of advanced service contracts and proposed a framework for developing contracts along the lifecycle of assets. Crucially, the authors also identified a research gap regarding the translation of complex value propositions into a legally binding contract.

The lifecycle of a service agreement can be considered using the product lifecycle approach in which the "beginning of life" considers the translation of the value proposition into a contract, thus entering the negotiation phase of the service agreement. The "middle of life" then deals with the delivery of the services under the agreement. "End of life" deals with the re-negotiation of any such agreement, and expiry or termination of an agreement. Rostagno, Picchi, & Paolini [11] confirmed that General Electric use the terms ITO (or inquiry to order) and OTR (order to remittance) to describe the beginning of life and middle of life phases. This creates a separation of the sales process from fulfillment process.

The selection of terms used in contract law for the supply of goods and services falls under the discipline of contract law. The form depends on the application of case-, common-, or codified law which, in turn, is based on the place of law. Nevertheless, within any of these systems, there are basic foundations that are similar. Advanced service contracts, such as Rolls-Royce's "power-by-the-hour" are different from transactional service contracts due in a major part to the long duration of the contract; typically, ten or more years. Other industrial examples of advanced service contracts with long duration are from General Electric [12] and ABB [13][14]. Hilti, by contrast, provide in-service agreements with much shorter duration [15]. Other infrastructure agreements exist based on public-private partnerships [16]. NEC [17] provide a suite of contracts, where the term "Term Agreement" is used to describe a service contract with a long duration. Within the IT community, Service Level Agreements (SLAs) are common [18] and are often linked to important outcomes of the customer based on different metrics.

This research surveys practitioners and academics to determine areas for future research on building viable advanced services contracts.

3. Methodology

Based on the research question, which aims to gain an understanding of the knowledge gap associated with the translation of value positions into advanced service agreements, a mixed method [19] approach was employed. It was considered that the approach would deliver both a broad list of topics of concern, as well as further explore the depth of each of the identified topics. An explanatory sequential design (see Figure 1) based on mixed methods, was considered appropriate:

i. Quantitative: Delphi survey of experts to rank contract issues.
ii. Qualitative: Workshop with experts to gain qualitative insights.
iii. Qualitative: Assess the workshop discussion for emergent themes to inform the research agenda.

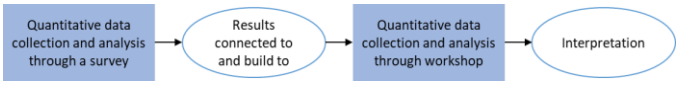

Figure 1: Explanatory sequential design adapted from (Creswell & Plano Clark, 2018)

First, an assessment was undertaken of publicly available advanced service agreements to gain an understanding of the core clauses and topic areas. The search was in no way an exhaustive search, but rather a search to gain insight into the forms of service contracts. Assessment of the contracts was completed by one of the study authors and an expert practitioner who supported the workshops. Second, a survey was distributed within a network of academics and practitioners associated with advanced services; the survey presented a set of common contract structure topics associated with advanced services. 22 respondents scored the topics using a five-point Likert scale to determine where existing knowledge required further study and development. Next, a workshop was held to elicit additional detail from each of the topic areas identified as a priority in the survey, and to provide a forum to raise concerns not captured in the survey. The discussion among the 43 participants in the workshop was analysed using qualitative data analysis tools (NVivo) to identify emergent themes in areas of contract-concern. The results of the multi-stage analysis determined several areas of focus and are presented herein.

4. Results

4.1. Identifying key contract terms in advanced services

Three different forms of contract were identified by the authors (*source is provided below*):

i. NEC4 Term Service Contract[1]
ii. Maintenance Service Agreement[2]
iii. Operation & Maintenance Agreement[3]

All the contracts can be considered suitable for advanced services as they all have the possibility of multi-year engagement and deal with risk and reward sharing to varying degrees. NEC4 Term Service Contract is a generic contract, while the other two are specific contracts from an advanced services provider. All documents are openly accessible using the links provided. Based on the assessment of the three contract forms, the following contract clauses were considered common and necessary for the advanced service agreements, as the authors and partner practitioners considered them to have wide applicability:

[1] Source: https://www.neccontract.com/NEC4-Products/NEC4-Contracts/NEC4-Term-Service-Contract/NEC4-Term-Service-Contract
[2] Source: https://www.ge.com/in/sites/www.ge.com.in/files/Agreement-with-PE.pdf
[3] Source: https://www.sec.gov/Archives/edgar/data/1806220/000114036120019395/nt10010929x7_ex10-15.htm

— Buyer-Supplier risks, responsibilities, and obligations
— Choice of Governing Law and Dispute Resolution
— Delivery & Title Transfer
— Force Majeure and Excluded Events
— Indemnification
— Insurance Coverage
— Inventory Utilization
— Laws, Codes and Standards
— Liabilities and Warranties
— Monitoring of Performance
— Operating Assumptions
— Owner's Support Obligations
— Price, Payment, and Performance Commitment

Table 1) related to the contracting of advanced services, asking for participants to score each area by the perceived importance of that area for advanced services. The details of each clause/area were not provided in the survey to avoid projecting bias into each area. The mean score of the responses was used to rank the judged importance of different clauses/areas. The standard deviation is provided in the table to describe the level of agreement within the survey population.

There was clearly a disagreement within the survey population. However, for the clauses ranked highly (areas of concern that would benefit from further research engagement) the distribution was relatively tight. The deviation for the "less important" clauses was generally larger.

— Repair Services and Logistics
— Scope, Covered Units and Terminal
— Site Conditions, Hazardous Materials, Health, and Safety
— Taxes and Duties
— Term, Termination and Suspension

4.2. Survey results

The survey participants were a combination of academics engaged in advanced services research, and practitioners from industry (see **Error! Reference source not found.**) fulfilling different roles (see **Error! Reference source not found.**) closely involved with advanced service contracts. The survey used the above set of 18 critical contract clauses (see

It was not possible to cross tabulate the results with the respondents' backgrounds (i.e., primarily management positions) or roles (>75% practitioners; also, it is noted as a limitation that legal practitioners were noticeably under-represented). Nevertheless, we consider the data to have provided useful insights and that the background provides a wide enough perspective on this problem at this time.

The following five critical factors have been identified as the most important:

i. Price, Payment, and Performance Commitment
ii. Buyer-Supplier risks, responsibilities, and obligations
iii. Scope, Covered Units, and Termination
iv. Monitoring of Performance and Systems
v. Liabilities and Warranties

Table 1: Identification of critical clauses for advanced service contracts

Factor	Mean ($\bar{x}$)	Standard deviation (s)	Responses (n)
Price, Payment and Performance Commitment	4.40	0.73	20
Buyer-Supplier risks, responsibilities and obligations	4.21	0.61	19
Scope, Covered Units and Terminal	4.06	0.73	17
Monitoring of Performance	3.85	0.73	20
Liabilities and Warranties	3.67	1.11	18
Operating Assumptions	3.47	0.88	19
Term, Termination and Suspension	3.32	1.08	19
Repair Services and Logistics	3.21	0.89	19
Owner's Support Obligations	3.21	1.15	19
Indemnification	3.06	1.11	17
Site Conditions, Hazardous Materials, Health and Safety	2.94	1.25	16
Force Majeure and Excluded Events	2.88	1.32	17
Delivery & Title Transfer,	2.82	0.78	17
Laws, Codes and Standards	2.71	1.27	17
Taxes and Duties	2.69	1.16	16
Insurance Coverage	2.56	1.26	18
Choice of Governing Law and Dispute Resolution	2.39	1.30	18
Inventory Utilization	2.32	0.86	19

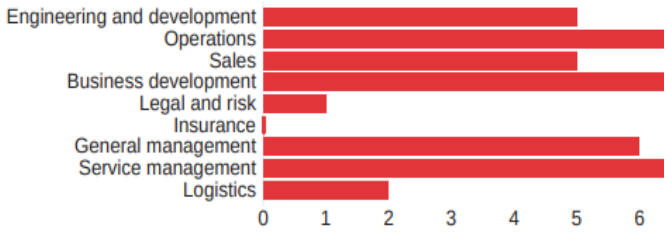

Figure 2: Background of survey participants

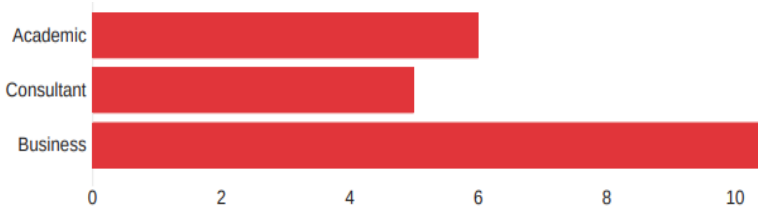

Figure 3: Roles of survey participants

However, the findings from the survey are limited in terms of context to which they relate; a survey participant pointed out the need for "a better understanding of the definitions behind the contract clauses".

4.3. Workshop results

The workshop was designed to learn more about the contextual aspects (see

Table 2) related to the critical clauses based on the three 90-minute workshops. Four keynote speakers were asked to present their experiences related to the essential critical contract clauses. Feedback and questions from chat and breakout sessions were collected, and later organized by the keynotes. The transcripts were coded, as described in the methodology above.

The results presented here have been calibrated against the contract clauses considered most important by the survey results. There was an emphasis on the need for alignment between selling, buying, and delivery; there was no clear emphasis on one being more important than the others.

Table 2: Summary of codes supporting the findings

Source	Transcript Quote	Price, Payment and Performance Commitment	Buyer-Supplier risks, responsibilities and	Scope, Covered Units and Terminal	Monitoring of Performance and Systems	Liabilities and Warranties
Chat main session	How to avoid you invest all the time educating the customer on the value proposition including approach and outcomes to achieve it and then the customer sending out an RFP by procurement who's only interest is to lower the price, not understanding the value. Competitors that do not understand what it takes to deliver the service successfully due to lack of experience may just win the business with a lower price in the RFP. In the end the customer loses and the initiating service provider loses its sales effort/investment	(x)		x		
Chat main session	For example, when purchasing product-service systems the spend of the first year is lower but in the long term maybe not so much. If there are (e.g. bonus) targets for spend cutting this might give ground to biased decisions. On the other hand, there may be existing process for purchasing equipment but in most cases not these services. And there will in most cases not be three (or more) offers to evaluate and compare.	(x)		x		x
Chat main session	It depends on the degree of standardization of your service offering. in my experiences it is key to have a central deal desk which builds for the seller the connection to finance, legal and delivery organisation to get all approvals to ensure the services can be delivered profitable with limited risk. Those services become so complex one person cannot manage it	(x)		x		x
Chat main session	Who should pay for the important effort to be done to determine the correct statement of work and other preparations of such complex contracts?	x				
Chat main session	how do you ensure performance levels stay high since performance may be tied to payment				x	x
Chat main session	I would add the contracting period which is key for the business case			x		x
Chat main session	You need a typology of contracts related to type of service			x		x
Chat main session	Variable pricing should address the variable cost drivers.	x			(x)	x
Full main session	Contracts workshop: On an operational level, and how do I write that into my contract, of course, if I look at who knows what's going to happen in 12 years' time, for example.			x		x
Full main session	Contracts workshop: That is a fundamental piece from for my for my contracting So how do I take care of it, how does, how do I work, the flexibility in my contract that I can	x		x	x	x

Price, Payment, and Performance Commitment: Price and payment were essential for all three phases: buy, sell, and during the delivery phase. In the survey, Price & Payment were identified as the most critical aspect; and this was repeated in the discussions. The standard deviation on the question was low, confirming that this was a crucial aspect for most of the participants. It was notable that there was no clear concept of what defines a price in a long-term agreement. This is in part due to the revenue model and the forms fees can take. This included the form of any gain/pain share through the use of performance commitments.

Buyer-Supplier risks, responsibilities, and obligations: This was about risk allocation. During contract negotiations, the focus is on 'who does what' and 'who "owns" the risk.' The cause is likely from the change in the lead from the initial contract negotiation phase to the delivery phase. Nevertheless, the balance can change during the service delivery phase and must be reflected in the updated contract. This leads quickly to contract governance and contract "creep" issues.

Scope, Covered Units and Terminal: This covers the scope of the service contract. What is in- and what is out of scope needs to be clearly defined. This concerned the more manageable part of the agreement and the core part linked to the value proposition. The modular design was considered necessary to improve the scope's efficiency. Options here also support the initial sales process, as it provides a more explicit link to the value proposition. Terminal points are application-specific, and for some agreements, not applicable. Whereas for others, these points are essential. Here the value co-creation activities become more apparent along with the interdependencies. What was discussed in the operational phase was that the initial contract design may not end up reflecting the actual delivery.

Monitoring of Performance and Systems: Again, this was considered necessary in both the negotiation and delivery phases. It is the area where digital has perhaps the most impact and is more intrusive on the customer than the other clauses.

It is also necessary to ensure that, in pay-per-use contracts, the events that trigger payments are counted. Data consumed significant portions of the discussions. The focus fell particularly on ownership and monitoring, and extended to the use of data and derivatives (including metadata). Data privacy and value of data were raised. The actual use of data away from operational aspects was discussed, although the consensus was that it is not often used as it should/could be used.

Negotiating and delivering advanced service contracts: Advanced services are complex value systems involving multiple disciplines across many organizations. Pricing of advanced services in the context of servitization has been an ongoing discussion in the research community of servitization. The context in which services are offered or executed is of relevance. Defining the context in which services are embedded is a crucial challenge without regard to capturing the contextual implications and value-driving aspects in a contract.

Defining contextual aspects of advanced services or creating the value system/constellation becomes an elaborate and costly task. These activities of defining and creating advanced services lead to unique customized solutions which are hard to compare with other offers in the market. Therefore, traditional procurement strategies are not suitable to elaborate on the competitiveness of the advanced services. Consequently, the phase of building an advanced service value proposition can come with a high financial risk for providers; and comes with the risk of giving critical knowledge regarding the advanced services that the potential customer can take to different suppliers once the value proposition is defined.

Liabilities and Warranties: As previously indicated in the survey, liabilities and warranties clauses are important factors (see Table 1). During the workshop, these clauses were initially discussed in the context of the longer-term nature of advanced services agreements. The need for contractual flexibility was stressed and clauses such as liabilities and warranties could be considered as 'baseline or fallback principles.' In addition, liability and warranty clauses were mentioned as examples of traditional procurement strategies driving contractual requirements, which may not reflect the nature of advanced services.

5. Discussion

To focus the discussion on areas related to service engagements, the workshop structure was split into three parts. The first session examined the sales process for advanced services. The second session considered the buy side, or the purchasing of advanced services. The final session focused on the delivery of advanced services. Each session was led by a practitioner expert with direct expertise in the field. Participants were encouraged to ask questions, relay concerns, or provide supporting evidence linked to their experience with advanced service business models.

All the sessions confirmed the importance of the team (e.g., a commercial team for the sales process comprising of sales, legal, risk management, finance, etc.) in building the contract for advanced services. There was an understanding of the need for a "standardised" contract for efficiency, yet a need to remain flexible and allow for customisation. There was also common agreement of a need for the adaptation (through governance) of the contract during the delivery phase, as not every emergent situation can be foreseen.

The specific emergent areas that require further study were, "Price, Payment and Performance Commitment"; this was followed by "Scope, Covered Units and Terminal Points", "Buyer-Supplier Risks, Responsibilities and Obligations", "Liabilities and Warranties", "Monitoring of Performance and System Conditions". These need to be understood from different perspectives and consider potential evolution over time as specific situations change. The contract areas determined to be of least concern focused on "Inventory Utilization", "Governing Law & Dispute Resolution", "Insurance Coverage", "Taxes & Duties", and "Laws, Codes, & Standards". This is not to say that these topics were of no concern, but instead were considered to be of lesser immediate importance in delivering advanced services.

Emerging from the workshop without first appearing in the survey was the need to better understand the various contractual implications of the data sitting at the heart of these new models. In particular, questions around how contracts must address issues of data ownership, access, use, privacy, and confidentiality.

5.1. Selling Advanced Services

When considering the 'buy' and 'sell' sides, it was clearly stated during the discussion that many firms are unsure of the apparent contract design stages necessary to convert the value proposition into a formal agreement. There was some confirmation from the buy-side that procurement departments were unsure or unable to buy advanced service agreements. This presents a barrier to the wider uptake of such offers. Furthermore, firms were used to the "battle of the forms" with transactional services, yet with advanced service agreements the relationships change, and for large agreements the contracts are negotiated. This illustrates iterative aspects of the process and the need to gain a position where both firms are content with the agreement. This must reflect the alignment of the long-term interest of both parties. For smaller value contracts, there may not be sufficient value to justify large negotiations teams, and where this is the case a more standardized approach may be appropriate. Determining who pays for the contract development was a moot point, in general the seller needs to have a preferred form(s) of contract and so the cost should fall to their service or business development costs.

The form of working with alignment of outcomes and risk transfer means that the advanced service agreements have many aspects of an alliance agreement, rather than a traditional service agreement (or an SLA). This provides the possibility at one end of the spectrum of more standardized offers and

associated agreements, and at the other end highly bespoke solutions where the contract is negotiated to maximize the value co-creation [20]. On this basis it may be worth considering the literature on alliance contracts [21] as it may well provide additional input into advanced service agreements. The literature of alliances also confirms the need for management, rather than procurement, to take the lead in such agreements. The literature also points to renegotiation of agreements to ensure ongoing alignment of outcomes.

5.2. Delivery phase

Scope definition, price, and performance measurements during the normal delivery of the agreement are key to a useful outcome. They need to clearly define who does what, the fee structure, and how performance is measured. However, during the delivery phase the inputs confirmed that situations change (e.g., management, markets etc.) that lead to the need for a renegotiation. Also, failures may occur during delivery, and the reasonability for failure needs attributing along with the remedy. There are distinct levels of "failure". Technical failure (e.g., a service action leads to equipment failure), which can be covered with traditional clauses that describe warranty and performance commitments. Human or management failures may lead to disputes between the parties; here, the need for dispute resolution is key. This is also documented within the alliance literature. In the grey zone is the performance measure; there is a need for governance on the metrics (i.e., continued achievement of bonus payments may suggest that the level set is not appropriate). On this topic, the management of SLAs may provide some insights into their governance; NEC may also provide some guidance as they provide optional annexes that describe pain and gain sharing.

5.3. Theoretical & Managerial contributions

To keep pace with the significant interest and growth of PSS/Servitization/AS business models, accompanying contracts must evolve alongside the co-created value proposition. Not only must new structures of contracts exist to properly initiate engagement, but some contracts must evolve during the engagement to capture unforeseen emergent value as trust grows in the partnership.

The results of the analysis present clear direction for further research for teams of academics and practitioners. However, equally importantly given the topics of concern, is the evidence presented of the overall agreement that future development of contracts must be interdisciplinary in perspective. Colleagues from the disciplines of Marketing, Operations, Law, Engineering, Economics, and Finance each have important insights required to build new competencies into viable contracts.

6. Conclusion

The research question presented above asked, in what areas are traditional contracts and agreements insufficient, given that the value created through advanced service business models is known to evolve? The results of the project reveal that there are many issues in the contract acquisition and delivery phases that remain open and unclear for practitioners; for these areas, there is limited research and limited practical knowledge. From the contract assessment, survey, and workshops, we consider the following require further investigation:

- the relationship between alliance agreements and advance service agreements
- the contract design phase for advanced services
- approaches to standardize the offer/negotiation phase
- the structuring of the price through the revenue models and the pain/gain sharing of performance commitments
- the appropriate risk allocation and the parties' roles and responsibilities towards each other and third parties (as this relates to value co-creation)
- scope development is perhaps as important as the boundaries of the scope
- the monitoring of operational performance during the delivery of the services
- the liabilities and warranties of the contract are a legal matter that is especially important for smaller providers
- the interplay of the different phases and the integration of longer-term governance to the delivery phase

The limitations of this study are based on the sample size of the self-selecting participants and the potential bias of the experts with the workshops. As previously noted, there was limited insight in the areas of law/legal perspective; a result of reduced representation from that discipline. Given the limitations, we consider that there is a need for a multi-disciplinary study into advanced service contracts.

7. Acknowledgements

The authors would like to acknowledge and express their gratitude for the support, guidance, and funding for this research, which was provided by the Digitally Enhanced Advanced Services (DEAS) Network + (funded in the UK by the EPSRC). The authors would also like to express their gratitude to the practitioner partners, Lars Hennecke (Ace Advisor Services), Franck Formis (FFF Consulting), and Andrew Harrison (formerly Rolls Royce) who gave their time and insight to this project.

8. References

[1] Vargo SL, Lusch RF. Service-dominant logic: continuing the evolution. Journal of the Academy of marketing Science. 2008 Mar;36(1):1-0.

[2] Spring, M. & Araujo, L. Service, services and products: rethinking operations strategy. International Journal of Operations and Production Management. 2009; 29 (5)

[3] West S., Zou W., Rodel E., & Stoll O. Value Co-creation in Digitally-Enabled Product-Service Systems. In: Kohtamäki M. et al. (eds) The Palgrave Handbook of Servitization. Palgrave Macmillan. 2021

[4] Smith, L., Maull, R., & Ng, I. Servitization and operations management: A service dominant-logic approach. International Journal of Operations and Production Management. 2014; 34 (2)

[5] West, S., Wenting, Z., & Stoll, O. (2021). The Contracting of Advanced Services Based on Digitally-Enabled Product-Service Systems. In: IFIP International Conference on Advances in Production Management Systems (pp. 228-237). Springer.

[6] Baines, T., Ziaee Bigdeli, A., Bustinza, O.F., Shi, V.G., Baldwin, J. & Ridgway, K. Servitization: revisiting the state-of-the-art and research priorities. International Journal of Operations & Production Management. 2017; 37 (2)

[7] Kreye, M. E., Roehrich, J. K., & Lewis, M. A. Servitising manufacturers: the impact of service complexity and contractual and relational capabilities. Production Planning & Control. 2015; 26(14-15), 1233-1246.

[8] Brodie, R. J., Lobler, H., & Fehrer, J. A. Evolution of service-dominant logic: Towards a paradigm and metatheory of the market and value cocreation? [Article]. Industrial Marketing Management. 2019; 79, 3-12.

[9] Martin-Pena, M. L., Diaz-Garrido, E., & Sanchez-Lopez, J. M. The digitalization and servitization of manufacturing: A review on digital business models [Review]. Strategic Change-Briefings in Entrepreneurial Finance. 2018; 27(2), 91-99.

[10] Payne, E. H. M., Dahl, A. J., & Peltier, J. Digital servitization value co-creation framework for AI services: a research agenda for digital transformation in financial service ecosystems [Article]. Journal of Research in Interactive Marketing. 2021; 15(2), 200-222.

[11] Rostagno, A., Picchi, D., & Paolini, P. Integrated Maintenance Practices For Large, Heavy-Duty Gas Turbines. In Offshore Mediterranean Conference and Exhibition. OnePetro. 2011, March

[12] Jackson, K. H. GE Power Systems, a General Electric subsidiary, has a 28-year contractual service agreement (CSA) to provide maintenance and other services to Nigeria LNG Ltd. Hydrocarbon Processing. 2003; 82(10), 37-38.

[13] Jackson, K. M. ABB and Dow Chemical Co.(Dow) have signed a 10-yr global strategic agreement. Hydrocarbon Processing. 2001; 80(7), 86-86.

[14] Hedén, E., Wedborn, V., & Nordahl, J. Developing Dynamic Outsourcing-Bringing continuous added value to the ABB Full Service partnership. 2008.

[15] Franco, M. L., Almada-Lobo, B., & Sousa, R. S. Servitization: a Service-based Resilience Strategy for Manufacturing Firms. INESC TEC Science&Society, 2021; 1(2).

[16] van den Hurk, M. Public–private partnerships: where do we go from here? A Belgian perspective. Public Works Management & Policy. 2018; 23(3), 274-294.

[17] Hughes, K., & Waterhouse, P. Understanding NEC4: Term service contract. Routledge. 2018.

[18] Wieder, P., Butler, J. M., Theilmann, W., & Yahyapour, R. (Eds.). Service level agreements for cloud computing. Springer Science & Business Media. 2011.

[19] Creswell JW, Shope R, Plano Clark VL, Green DO. How interpretive qualitative research extends mixed methods research. Research in the Schools. 2006 Aug;13(1):1-1.

[20] Frost, R.B.; Cheng, M.; Lyons, K. A (2019) Multilayer Framework for Service System Analysis. In: Handbook of Service Science; Maglio, P.,Kieliszewski, C., Spohrer, J., Lyons, K., Patrício, L., Sawatani, Y., Eds.; Service Science: Research and Innovations in the ServiceEconomy; Springer: Cham, Switzerland, 2019; Volume II.

[21] Ariño, A., & Reuer, J. J. (2004). Designing and renegotiating strategic alliance contracts. Academy of Management Perspectives, 18(3), 37-48.