

A DELPHI STUDY TO EXPLORE TENSIONS AND TERRITORIALITY WITHIN
SERVITIZING OIL AND GAS ORGANISATIONS

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INTRODUCTION

Oil and gas production has a strong influence on global and local economies (Lorusso and Pieroni, 2018), and increasingly on the global environment because of the significant growth in unconventional extraction methods like tar sands (Finkel, 2018) or fracking (Gearhart, Adegbola and Huemmer, 2019). It would, therefore, seem beneficial if the industry could become more efficient with the exploitation of this finite global resource. The successful implementation of servitization in organisations within the oil and gas industry would allow such organisations to work together and provide a beneficial outcome for themselves, the global economy and the environment. However, this paper intends to show that servitization is poorly executed and the potential gains are seldom fully realised (Valtakoski, 2017). This paper focuses on the oil and gas industry and aims to explore the hypothesis that no defined strategy exists for implementing servitization, resulting in poor management support and allocation of resources, especially in situations where the industry is in recession. It is further hypothesised that the mechanism for servitization failure is that tension arises from a poorly executed, or absent, change processes due to the absence of a servitization strategy. The lack of a clearly defined strategy coupled with a lack of management support and resources can lead to territorial behaviours which ultimately result in the servitization process stagnating, regressing or failing entirely.

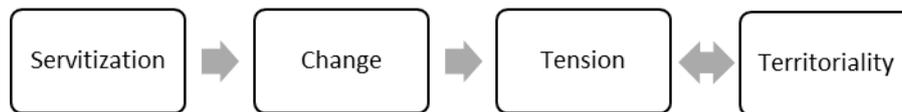
The following sections shall discuss the concepts of servitization and how this can lead to change (Bigdeli *et al.*, 2015; Visnjic, Wiengarten and Neely, 2016) and how change theory can add important insight to servitization theory to increase understanding of the process (Ziaee Bigdeli *et al.*, 2017). Existing literature is based on the work of Lewin (1942), but one must question if the model of “creative destruction” to create new value (Schumpeter, 2010) is still appropriate in an age where excessive and repetitive change have been shown to generate negative consequences (Abrahamson, 2004; Johnson, 2016). Current literature focuses almost exclusively on the perspective of the manufacturer to drive servitization and neglects customer contributions to the process (Pereira, Kreye and Carvalho, 2019), and it is one of the intentions of this paper to examine how manufacturers *and* customers deal with change that can lead to tensions and territoriality.

The Delphi Method has been selected to perform this investigation as it is particularly well suited to investigating servitization in complex business relationships (Baines and Shi, 2015). It is important to highlight that unlike other methods, the Delphi Method does not seek to understand a population by investigating a statistical sample, instead it is a group decision method for a specific question or group of related questions (Okoli and Pawlowski, 2004). Three groups were created for the investigation; Top, Middle and First-line Managers and each group had four members representing both customers and manufacturers. The groups were created in this way to investigate the impact that dissonance between management levels and the effect this can have on the servitization process, which has been highlighted in recent studies (Crowley, Burton and Zolkiewski, 2018). In line with the Delphi Method, each member was individually interviewed and then two follow-up questionnaires were completed before a consensus, or agreement that there was no consensus, was reached. This paper intends to answer the following research questions:

1. Does the servitization process create significant change within an organisation that can then manifest itself as tension and territorial behaviour amongst the population?
2. Do management at different levels have different perceptions of the effect of servitization induced tensions and territoriality?

3. Do management fail to put into place, or do not perceive the need for, adequate tools and processes to manage servitization induced tensions and territoriality?

The figure below shows the proposed mechanism by which servitization leads to change which creates tension and this tension, in turn, creates territoriality. The figure further shows that territoriality can create additional tension, which creates additional territoriality and so



the cycle continues.

LITERATURE REVIEW AND THEORY

SERVITIZATION

There are many papers written on servitization, but it is still largely unrecognised as a strategy in many industries, such as oil and gas (Bandinelli and Gamberi, 2011; Frow and Payne, 2011; Sakyi-Gyinae and Holmlund, 2018), which is surprising given the potential gains. Servitization offers the manufacturer an opportunity to increase revenue and profitability (Kumar and Marqueset, 2007; Bandinelli and Gamberi, 2011), and if carried out successfully these goals can be realised (Anderson and Narus, 1995; Wise and Baumgartner, 1999). Strähle, Füllemann and Bendig (2012) state that income from additional services can increase revenues up to 35%. It is also widely accepted that servitization increases competitive advantage because of the difficulty other providers face while attempting to replicate the combined offering of products and services (Gebauer, Friedli and Fleisch, 2006).

CHANGE THEORY

Servitization necessitates significant organisational and individual change (Ziaee Bigdeli *et al.*, 2017). Change is an often overlooked consideration in a servitizing organisation, and the success of the servitization strategy is contingent upon the organisation's change strategy (Bigdeli *et al.*, 2015). Change is often a problematic process that can lead to anxiety and stress in individuals and teams (Rowland and Higgs, 2012).

TENSIONS AND TERRITORIALITY WITHIN OIL AND GAS SERVITIZATION ORGANISATIONS

Many scholars have identified that the act of servitization often requires fundamental changes at both an individual level, and perhaps, more importantly, a collective level (Palo, Åkesson and Löfberg, 2018) within an entire organisation (Ulaga and Reinartz, 2011; Alghisi and Saccani, 2015; Spring *et al.*, 2017). The consequence of these changes is expounded upon by Burton *et al.*, (2016) who discuss the implications of these changes, specifically, that resources and responsibilities will inevitably move to and from one individual or department to another or disappear altogether. It is, therefore, reasonable to assert that some of those affected will be subject to tension. A reasonable conclusion can be drawn which states that a loss of authority and resources, increase or change in workload and responsibility, fear of redundancy and mandatory re-training because of changes caused by servitization will cause tension within an organisation (Baines and Lightfoot, 2013; Song and Sakao, 2016). This tension can, and should be, expected in both individuals and groups (Burton *et al.*, 2016).

Zolkiewski, Burton and Stratoudaki (2008), Song and Sakao (2016) and Burton et al., (2016) suggest that organisations need to acknowledge that tension and territoriality will occur and take measures to mitigate the negative impact this can have.

METHOD - THE DELPHI METHOD

Baines and Shi (2015, p. 1174) have identified that “servitization is a challenging topic to study” and recommend the Delphi Method as a solution. It is important to note that the Delphi Method does not seek to create a statistical sample or to be representative of a larger population; instead, it is a group decision method for a specific question or group of questions (Okoli and Pawlowski, 2004). The Method was designed to create a single point of convergence, but there “was the possibility of polarization or clustering of the results around two or more points” (Ludwig, 1994, p. 57), which may prove insightful. The Delphi Method allows research subjects to contribute individual responses which are not swayed by the larger group pressures or be subject to group conflicts. The method also allows the researcher to compile early results and build upon them during the research process (Loo, 2002). Finally, the method overcomes logistical issues of assembling a group of experts in the same place at the same time on two or more occasions (Ogbeifun, Mbohwa and Pretorius, 2017).

APPLICATION OF THE DELPHI METHOD

In most studies, the preferred number of rounds is limited to two or three (Sumsion, 1998; Thangaratnam and Redman, 2005) but can be as high as four or five (Turoff, 1970; Rudy, 1996) or until a consensus is reached (Mullen, 2003). There is much discussion on the number of panel members required for a Delphi study (Keeney, Hasson and McKenna, 2011) due to, amongst other things, the many different contexts where the technique can be used. Scholars such as Mitchell (1991) and Johnson (1976) state that the error rapidly drops when the number of members is increased to between 8 and 10, but there is no significant reduction in error once the number of panel members increases past 13 to 15.

Given the above criteria, this study consisted of three rounds and fifteen panel members. Each member of the research group was individually interviewed using a semi-structured interview and then provided with the feedback of the entire group. Comments on the feedback were sought, and these comments were again fed back to each member of the entire group for further comment. Once complete, the comments and interview findings were analysed. The research subjects were experienced individuals from eight different organisations in the oil and gas industry, most of whom had extensive international experience, and many had worked for several companies. The range of ages spanned between 28 and 50 years, with the median age being 42.5. The range of oil and gas industry experience ranged between 5 and 30 years, with a median experience level of 16.5 years. The research subjects came from diverse cultural backgrounds: Europe, North and South America, the Middle East, Asia and Australasia.

FINDINGS

The semi-structured interviews were transcribed. Each topic was reformatted into a questionnaire statement, summarising each topic, and all the subjects were asked to comment to what degree they agreed with that statement. Results were recorded on a scale of 0-100, where 0 represents strongly disagree and 100 represents strongly agree. In accordance with the method outlined by Keeney, Hasson and McKenna (2011) the median was calculated for each of the questions, in the first instance for agreement within management level, irrespective of organisation type, and then agreement within organisation type, irrespective of management level, and finally a combined value. In general, a median value of 7 or more,

somewhat agree, was deemed to show agreement with the statement. In addition to this, the coefficient of variation (CV) was calculated and values of 25% or less were deemed to show consensus (Tian, 2005), i.e. that the range of responses around the mean value was low indicating that most group members were in close agreement with the mean value. The third and final round of the research sought to provide clarification only on those questions which agreement was absent, or the range of responses was too wide to show a consensus. These questions were sent individually to each research subject who responded, usually via email, with a short explanation of their view in relation to each question. These were then reviewed, along with data from previous rounds. In all cases, the third round was successful in creating a consensus in all remaining questions, and no further rounds were required. The collated results from all rounds are discussed in the following sections of this paper.

LEVEL OF SERVICITIZATION

When asked about their organisations' current level of servitization most customers reported that they believed it was relatively low, or as one manager phrased it; "to international standards, I think we are pretty backward" (FLC2, 2019). For example, one customer believed that they had to do many of the manufacturer's tasks as well as their own (TMM3, 2019). However, the manufacturers were of the opposite opinion and most stated that their organisations were highly servitized, one even remarked that they were "clearly recognised industry leaders" (MMM2, 2019).

Both manufacturers and customers agreed that servitization was necessary and beneficial for good business and should produce an improved outcome for all actors. The following is a quote from a senior manager discussing the benefits of servitization: "So the company is performance driven, to achieve that you have to cooperate with all together, all stakeholder and all service providers" (TMC1, 2019). However, there was some frustration expressed due to the lack of progress, as one manager described it (TMM2, 2019).

Despite all parties agreeing that servitization was an advantageous and necessary strategy, there was agreement from both manufacturers and customers that in reality, the likely outcome would not be a fair and balanced mutually beneficial win-win situation. As one customer phrased it: "The downsides are always that one is always gonna try and screw the other one over" (MMC1, 2019). Customers had come to the same conclusion that "90% of the case [the relationship] gonna be one-sided" (FLM1, 2019).

Much discussion and clarification around the cyclic nature of servitization were required, but in successive research rounds, it was identified that most believed that while servitization should not be cyclic, most admitted that it was, especially in industry downturns. The explanation provided was that management was "sometimes unable to justify the additional associated cost with the servitization; thus, the support is not there all the times." (TMM1, 2019), and this may force organisations to reduce headcount and "sacrifice servitization" (MMM1, 2019).

CHANGE

It was confirmed through the first-round interview and the second-round questionnaire that there is a difference in attitude to change between customers and manufacturers. Almost all manufacturers expressed a high appetite for change, whereas customers were more cautious in their attitude towards change. Despite the differing attitudes towards change, all parties agreed that servitization requires a significant change within an organisation. However, servitization is just one change amongst many within all the organisations researched. Most middle managers were especially vocal on this subject and described the symptoms of

Repetitive Change Syndrome where “employee burnout [is] often expressed as cynicism” (Abrahamson, 2004, p. 94).

Both customers and manufacturers report resistance to the change caused by moving to a more servitized organisation. All parties described how frequent change could result in a cynical attitude, where staff are confused and have no motivation to try and make the most recent change, in a long line of changes, successful.

TENSION AND TERRITORIALITY AS A RESULT OF CHANGE

One of the primary aims of this paper was to investigate the link between the introduction of servitization and the resulting creation of tensions and territoriality within the workplace (Bustinza, Vendrell-Herrero and Gomes, 2019). When asked about the impact of change caused by servitization, there was general agreement that it caused tension.

With an increase in tension, the research subjects were asked how the tensions can manifest themselves. All reported that it was common, to a greater or lesser degree, for the development of territorial behaviours to emerge. These behaviours varied from poor attitude to sabotage of colleagues. A middle manager explained why individuals react to tensions with territorial behaviour. His explanation identified that those individuals were becoming protective of their positions against the threat, or perceived threat. Most of the behaviours recounted were less extreme than those discussed above and comprised the withholding knowledge and the reluctance to volunteer their knowledge or services. It was expressed that the motivation for this behaviour was to make it more difficult for the organisation to discard them, in essence, the belief is that to give away knowledge was to reduce their value to the organisation and make it easier for the company to make them redundant.

The impact of this territoriality is to weaken the organisation, or as one manager phrased it, “I think our main challenge is not that people are concealing, but yes, you get protective. And especially if the change, now, is affecting the business in a negative way” (TMM3, 2019). Several of the research subjects agreed that, not only, could territorial behaviours damage their organisation they could also damage the relationship with business partners. Despite the recognised disruption that change to a more servitized organisation creates, and the acknowledged need for mechanisms to deal with these disruptions (Song and Sakao, 2016) all research subjects reported that no such specific mechanisms had been introduced.

MANAGEMENT COMMITMENT, RESOURCES AND STRATEGY

Management commitment was discussed and there was agreement that there was not a consistent commitment from all management levels. It was observed, however, that less senior managers may only feign commitment and support to protect their positions within the company. One observation that most research subjects made was that there was no defined strategy or plan in their respective organisations for implementing servitization. A phrase that was repeatedly used was ‘organic’ the definition was clarified and meant to develop without guidance or a defined strategy, as reported by this manager when asked if his organisation had a servitization strategy: “No, obviously I think it was kind of a bit organic” (MMM1, 2019). Very similar comments were made by managers in other organisations when asked the same question. This is similar to the comments of Ruiz-Alba et al. (2018) who described pharmaceutical organisations as “flying blind” in their application of servitization.

This lack of planning may account for the lack of resources, specifically skilled personnel and time to implement servitization. There was a high level agreement that servitization would be welcomed at an individual level, as there were tangible benefits for individuals.

However, many of the manufacturers were cautious that the relationship would be skewed, as discussed previously, leading to a greater workload. All agree that, at an organisational level, increasing servitization would increase profit and differentiate them from competition and peers, increase teamwork and communication, reduce time and mutually beneficial decisions. Furthermore, all were in agreement that servitization was good for the industry by reducing its impact on the environment and global resources. The analysis showed that most (83.33%) of the research subjects agreed with this assessment, and the remainder (16.67%) thought this is likely the case, none disagreed with the statement.

DISCUSSION AND CONCLUSIONS

LEVEL OF SERVITIZATION

Most customers believed that their level of servitization was low, which is in contrast with the manufacturers who believed they had a high level of servitization. Part of the difficulty was that there is no standard matrix for measuring servitization in the oil and gas industry, unlike other industries such as heavy manufacturing (Neff *et al.*, 2014). Therefore, this assessment was a personal measure of servitization. Most customers expressed that their organisations were in the first stages of becoming a servitized organisation, whereas the manufacturers stated they had an established, but still growing servitized organisation. Given that customers tend to hold more influence in the relationship (Zolkiewski, Burton and Stratoudaki, 2008; Lacoste and Johnsen, 2015) it is puzzling that previous research has largely neglected them.

The move towards servitization was accepted as good for business by all those interviewed and could create a mutually beneficial environment, which supports existing servitization theory (Baines and Lightfoot, 2013). One fear which was expressed by manufacturers and confirmed by customers was that the relationship would become skewed in favour of the customer. This finding contradicts current theory which states that trust needs to be established to create and maintain a servitized relationship (Lusch, Vargo and Tanniru, 2010), but the accepted assumption is that this trust will be mutual and balanced (Kohtamäki *et al.*, 2018) which has been shown to be an incorrect assumption.

The assumption is that servitization is a linear process (Kreye and Lewis, 2015). However, during this research, it became evident that this theory is incorrect, and this is not the case within the oil and gas industry. While all those interviewed believed that servitization should not be cyclic, all agreed that it was due to market forces, this finding does not appear in current theory or research. The research supported current theory which states that servitization has a value that is difficult to quantify especially by managers who have limited experience with it (Bertoni, Panarotto and Larsson, 2016). Therefore, in most cases, these managers were unwilling, and perhaps unable (Nudurupati *et al.*, 2011) to defend the budget required to maintain or increase the level of servitization during a recession.

CHANGE

One finding that was not expected was the differing attitudes to change; it was observed that manufacturers welcomed change in their organisation and working practices. However, customers were far more cautious of change, this difference contradicts much of the current understanding of such relationships which assume both parties need similar attitudes to work together (Rowland and Higgs, 2012). It is possible that this difference is due to the different consequences that change can create for each. The manufacturer must constantly find ways to differentiate themselves from their competition (Tongur and Engwall, 2014). Changing

organisational practices, such as servitization, is one way to make this differentiation, along with the more traditional route of creating better and less expensive products (Baines and Lightfoot, 2013). However, it is proposed that the customer does not need to differentiate themselves from their peers. The customer may only see value in change if this change can be shown to have a high probability of producing a better product and is therefore worth the additional risk. The risk exists at both at a personal level and organisational level. At the personal level the engineer accountable for the decision to change carries the responsibility for failure, which could range from a loss of credibility, termination and potentially legal consequences, whereas remaining with existing methods poses no additional personal risk. At an organisational level even a minor failure can escalate and have enormous financial consequences, one recent example being the Deepwater Horizon incident where the total cost to BP was estimated to be between \$61.6 billion and \$65 billion (BBC News, 2016; Bousso, 2018).

One subject that both organisation types agreed on was the volume of change within their organisations. Many were cynical concerning the constant stream of changes that were driven down by management, which is consistent with repetitive change syndrome (Abrahamson, 2004). It was clear that the change caused by the introduction and development of servitization had also seen cynicism at least at some levels within both organisation types.

TENSIONS AND TERRITORIALITY

There were several explanations given for the tension; the first was a loss of status as some saw some or all their roles being taken by another person or department or that their position was less critical to the organisation after servitization (Burton *et al.*, 2016). It then follows that they believe their jobs are less secure because of their, perceived or real, diminished role within the organisation. Finally, many managers feared that they would have less control as their departments shrunk or became less important to the organisation's future. Territorial behaviour was reported as being common, and all research subjects acknowledged that it was directly detrimental to their organisation and indirectly detrimental as customers and other business partners who felt the effects and reduced the value of their partnership, which is consistent with current literature on the subject (Vendrell-Herrero and Wilson, 2017).

MANAGEMENT COMMITMENT AND STRATEGY

When asked about commitment, all of those interviewed agreed that senior management was genuinely committed to servitization. However, this research extends current theory by identifying that commitment decreases as it is disseminated down the management hierarchy. There were two reasons given for this behaviour, which support current theory, the first was a refusal to change from existing practices or industry norms (Crowley, Burton and Zolkiewski, 2018), and the second was a reaction to the continuing number of changes they were expected to support (Abrahamson, 2004; Johnson, 2016; Johnson *et al.*, 2016). It is possible that these two factors are linked, specifically, that they become so cynical of new changes they refuse to accept any change and continue to use existing methods until the 'next change comes along'.

A significant finding was that all research subjects reported that there was a lack of a specific servitization plan or strategy within their organisation or any organisation they had previously worked for. Given that all parties agree on the benefits of servitization it is somewhat puzzling that they do not devote resources and planning to its development. When asked about this the managers expressed that they had not given it full consideration and were unaware of the need for a plan or strategy to perform better than the existing organic growth. Without exception, all research subjects agreed with literature (Barquet *et al.*, 2016) that

working in a more servitized environment would be beneficial and strengthen relationships with their business partners and increase their level of job satisfaction.

CONCLUSIONS AND IMPLICATIONS FOR MANAGEMENT

The first research question presented in this paper asks if the servitization process within the Oil and Gas industry causes a significant change which leads to tension and territorial behaviours. The research supports and adds to existing theory that servitization requires change and also confirms that this creates tension and that this leads to territoriality which is detrimental to the organisation and interactions with internal and external business partners. Failure to work efficiently will undoubtedly jeopardise operational performance and environmentally responsible extraction of finite global oil reserves.

The second research question adds to existing theory by showing that management support reduces as the message distributed down the management chain due to different perceptions of the need for servitization and change. Management must make a firm commitment to servitization and maintain their progress during the cyclic nature of the Oil and Gas economic environment. If such a commitment is made, employees may begin to believe that the need for the change is genuine and overcome the 'yet another change' resistance that is prevalent and leads to cynicism (Abrahamson, 2004; Johnson, 2016; Johnson *et al.*, 2016).

The final research question concerned the provision of resources and support or mechanisms to deal with tension and territoriality. The research supports and adds to existing theory that due to lack of consistent support or a comprehensive servitization implementation strategy these resources were either absent or ineffective in most cases (Pettigrew, Ferlie and McKee, 1992). This paper has added to the theory of servitization and the practical application of servitization in the oil and gas industry. The research highlights the need for a structured servitization strategy with suitable safeguards and resources to prevent, or lessen the impact of, tensions and territoriality.

All parties agree that servitization is beneficial and should be developed within their organisations and the industry as a whole. However, it is clear that the mindset of both manufacturers and customers in the oil and gas industry needs to change to make a success of servitization. This research extends current theory by showing that both parties believe the natural conclusion of servitization in the resulting environment would be skewed in favour of the customer, instead of a balanced and mutually beneficial outcome. It is, therefore, difficult to envisage how servitization can develop and become successful in the existing environment without the trust that both parties will act amicably.

All the changes above require a commitment from all levels of management to overcome the difficulties discussed. To make this commitment, management must be educated on the benefits of servitization and the mechanisms to make it work, or tensions and territoriality coupled with cynicism and fear of a skewed application will prevent development and realisation of the compounded benefits of servitization, which will result in better stewardship of global oil reserves.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The limitations of this study provide opportunities for future research into implementing servitization within oil and gas organisations. While the managers interviewed supported the current literature that servitization in relation to oil and gas was unique to that industry (Vendrell-Herrero and Wilson, 2017; Ruiz-Alba *et al.*, 2018), further research into this area could confirm this. Similarly, it was the opinion of the group that servitization support was

contingent upon oil price or the general health of the industry, this again warrants further study. In order to assess accurately the current level of servitization and therefore monitor its progress a standard measuring tool could be developed, similar to the one used by Neff et al. (2014).

The paper confirmed that there was agreement on many subjects, and that there were areas where manufacturers and customers had differing opinions. Investigation into these phenomena would be warranted to understand if this was due to organisational culture, or the grouping of like minds, or some other factor. One interesting subject of agreement was the assumption by manufacturers and customers that the resulting servitized relationship would be strongly skewed, this may indicate that trust could be an issue, or some form of game theory (Nash, 1951) was being observed where both parties were gravitating to a lose-lose Nash Equilibrium (Scharlemann *et al.*, 2001), and would be an intriguing line of future research.

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