Servitisation or Productisation? Two cases of service-based SMEs moving into manufacturing

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SERVITISATION OR PRODUCTISATION? TWO CASES OF SERVICE-BASED SMEs MOVING INTO MANUFACTURING

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ABSTRACT

Purpose: This paper presents a preliminary comparison of two service-based SMEs which moved into product development and manufacturing. The motivations, mechanisms, customer benefits and outcomes in adopting productisation, and the potential influence on servitisation, were investigated.

Approach: Following a thematic analysis, nine themes for comparison were identified from two previous publications. These themes were then mapped to the four aims of the investigation.

Findings: There were similarities in terms of the motivations for productisation and the mechanisms for acquiring manufacturing capability. However, the organisations have subsequently evolved in different ways. The findings highlight a positive impact on organisational innovation, but also indicate that the embodiment of customer value and the supply chain may limit potential servitisation.

Originality/Value: Cases of service organisations manufacturing are not well known and are therefore an interesting counterpoint to the existing literature on servitisation.

KEYWORDS: Productisation, servitisation, manufacturing, SMEs.

1. INTRODUCTION

Service organisations which have augmented their service provision through the adoption of product development and manufacturing (productisation) are not so well known, and provide an interesting counterpoint to the existing literature on the servitisation of manufacturing-based organisations. This research is a preliminary comparison of the outcomes for two such SMEs. One is an organisation which trades in steel and other metal products; the other started as a software services organisation, but has now moved into systems integration. The aims of the study were to investigate the motivations for productisation, the mechanisms by which it was achieved, the benefits for the customer and the outcomes for the organisation. The link between productisation and servitisation was also explored.

2. BACKGROUND

Servitisation is defined by the way in which an organisation evolves to meet its customer needs by using a mix of products and services, rather than being purely product-based or service-based (Vandermewe and Rada 1988). Although they acknowledge that servitisation can occur from either a service or product base, research has tended to focus on the latter, with motivation for product based organisations to servitise. The reasons for this include the increasing ability to compete through differentiation in offering (OECD 2007) and sustainability and support for the circular economy (Tukker 2004). Models of servitisation have been presented which demonstrate a continuum of product ownership – from outright customer ownership to pay for use (Tukker 2004). This first model defines an offering of a mix of product and supporting services as a product service system. Similarly, Baines and Lightfoot defined servitisation as a continuum of basic, intermediate and advanced services (2013). In the latter category, again the ideal model is that of 'pay per use'. For large organisations, the provision of advanced services is of particular interest. Nonetheless, there is evidence that servitisation may also be relevant for SMEs, primarily as a method of moving manufacturing-based organisations to be of higher value (MacBryde, Paton and Clegg 2013).

Productisation is a method of packaging customer offerings into standardised products. Harkonen, Haapasalo and Hanninen defined four types: productisation of products, of services, of software and of

technology (2015). The first definition is of particular interest in this paper, given that it applies to the development of physical products. The authors conceded that the differentiation of this from NPD activities was not clear, although the end objective was to provide a solution to the customer rather than the product itself. In such a way, this could be viewed as being in keeping with Vargo and Lusch's definition of service dominant logic, whereby any provision to a customer can be viewed as a service (2004).

The relationship between productisation and servitisation is worthy of further investigation. The productisation of software, for example, where individual programs can be combined into standard software packages and upgrades, can be seen as a route to servitisation for software companies (Harkonen, Haapasalo and Hanninen 2015). Given that current servitisation research has focused on manufacturing companies adopting services, it is also worthwhile to consider how service organisations have also adapted a more product-based approach, particularly physical products and in doing so, how servitisation and productisation may work together. Such cases provide an interesting counterpoint to the current research. However, evidence of them is limited.

In previous work, two such service-based SMEs were documented as separate case studies but not analysed together (Mountney et al. 2016, Mountney and Rawlinson 2016). In both cases, the organisations had moved into product development by developing the manufacturing capability themselves. More recently Lahy et al. have documented a longitudinal case study of a large global Third Party Logistics provider who had also moved into limited product development and manufacturing by developing manufacturing capability (2017). A concept framework of a forcefield analysis had been constructed to examine the enabling and restraining forces acting in this organisational development. However, the way in which the organisation had acquired the manufacturing capability (additive manufacturing) and how this impacted on their business had not been explored in this publication.

This paper contributes to work in this area through a preliminary comparison of the two previous cases (Mountney et al. 2016, Mountney and Rawlinson 2016). It compares and contrasts the evolution of each SME and the resulting impact of acquiring the manufacturing capability. It examines the motivations, mechanisms, benefits and outcomes for each business. In doing so, it aims to examine the extent to which productisation and servitisation have taken place and any limitations imposed on this.

3. SUMMARY OF THE CASE STUDIES CONSIDERED

3.1 B S Stainless

B S Stainless was formed as a steel trading company in 1998. In 2014, it embarked on a programme of product development to enhance its customer offerings, making the decision to develop the manufacturing capability in-house. A product called a metal jacketing system was developed for the oil and gas industry, which was a bonded sheet of steel and a vinyl coating, banding and a clip. Further details of the case were originally documented in Mountney et al. (2016). After the publication of the first case study, the organisation installed and commissioned the manufacturing equipment during the latter half of 2016 and secured its first orders in early 2017.

3.2 TBG Solutions

TBG Solutions was formed as a small organisation of three people in 2001, writing software for test installations. In 2007, the organisation moved into producing complete integrated test installations, including hardware, software and electrical systems, again by developing the manufacturing capability in-house through investment in people and facilities. A narrative of the organisation's evolution was documented in Mountney and Rawlinson (2016).

4. METHODOLOGY

The comparison of the organisations is based a content analysis of the publications cited in section 3 and a follow up interview held with B S Stainless in July 2017. As the nature of the work was exploratory, a thematic analysis identified nine themes which each formed a unit of analysis for further comparison and discussion (Boyatzis 1998). These were inductively generated according to the following criteria: they were highlighted by both organisations, and provided a base by which to establish the similarities and / or differences between the two. Two themes (Company Formation and Timeline) were used to establish a baseline to record the organisational changes. The remaining themes were then mapped against the aims to be explored: the motivations, mechanisms, benefits and outcomes. This can be seen in table 1. For the motivations, mechanisms and benefits the applicable themes were directly associated. For outcomes, four themes emerged for further investigation.

Table 1: Nine themes identified and their relationship to the aims

Theme	Related aim
1. Company formation (initial customer offering)	To establish a baseline.
2. Timeline	To establish a baseline.
3. Motivation for moving into productisation	Motivation
4. How did they productise?	Mechanism
5. Nature of customer offering (after productisation)	Benefits (for the customer)
6. Supply chain	Outcome (for the organisation)
7. How many of their products do they produce?	
8. Challenges from adopting productisation	
9. Opportunities from adopting productisation	

5. SUMMARY AND DISCUSSION OF FINDINGS

5.1 Baseline Themes

Theme 1: Company Formation

Although there are some similarities in each of the organisations, their customer offerings are significantly different and are in different markets. B S Stainless's services are centred around the supply of product, whereas TBG supplies a service.

Table 2: Company formation

Similarities	Differences	
Both are small companies. Both are private limited companies. Both have been established for a similar length of time. Both started out as service based companies, but moved into product development and manufacture. Both developed the manufacturing capability in-house.	B S Stainless started out as a trading company, buying steel from the larger steel mills, cutting and slitting it to size and then selling it on (NB this is still the main business).	TBG Solutions started out as a company writing software for test installations.

Theme 2: Timeline

B S Stainless has been adopting productisation over the past four years, so they are at an earlier stage of embedding it in the organisation when compared to TBG.

Table 3: Timeline

Differences	
B S Stainless: Productisation has been taking place over last four years. Production commenced end 2016.	TBG moved into productisation in 2007, so this is more embedded in the organisation than B S Stainless.

5.2 Motivation for moving into productisation: Theme 3

In both the earlier case studies, the mutual value to the customer and the organisation was highlighted. Both organisations productised when they felt that it would add value to them. The value as defined for the productising organisations is perhaps more intangible and is related to the added skills and capability which each acquired as a consequence (see section 5.5).

Table 4: Motivation for moving into productisation

Similarities	Differences	
Added value for the customer and the organisation.	B S Stainless used knowledge of customers and market to identify potential products which could solve a problem.	TBG's move into productisation was prompted by a customer request.

5.3 Mechanism: Theme 4

Both examples demonstrate how the organisations needed to invest in and work with external actors (either in partnership or through investment) in order to develop the necessary capability to productise.

Table 5: How did they productise?

Similarities	Differences	
Both had to bring in expertise from outside the organisation, but they did this in different ways.	B S Stainless formed strong links with external partners, such as suppliers who worked with them to coating products for the jacketing systems. Also for knowledge transfer, a partnership with a HE institution was formed through a Knowledge Transfer Partnership (KTP). The associate is now embedded in the company as a staff member.	TBG: After an initial attempt, they found and recruited a manufacturing manager and invested in a manufacturing facility.

5.4 Benefits for the customer: Theme 5

B S Stainless' development of a physical product to provide a customer solution is indicative of productisation of products as defined by Harkonen, Haapasalo and Hanninen (2015). The product itself delivers the service. Whilst this is also true for TBG, their approach is more in line with an organisation offering intermediate services alongside the servitisation continuum. It could therefore be argued that there are two outcomes here: one is pure productisation, the other is incorporating productisation as a means of achieving greater servitisation. In Mountney and Rawlinson (2016) it was suggested that TBG had developed a product-service system.

Table 6: Nature of customer offering

Similarities	Differences	
Both design and manufacture products to solve a problem for the customer.	BS Stainless have developed an integrated metal jacketing system for the oil and gas industry. which removes a step in the labour process, thus reducing the labour costs for their customer. Their view is that they compete on quality rather than cost and see UK manufacture as a way of guaranteeing quality. However an estimated 96% of their business remains as steel trading.	TBG offer a bespoke integrated test installation which incorporates electrical systems, software and hardware. Once installed, company will support with ongoing callout and maintenance and upgrades. They offer payment in instalments ('Op Ex' model).

5.5 Outcome themes: Themes 6-9

Theme 6: Supply Chain

B S Stainless are part of a complex supply chain indicative of construction projects in the oil / gas industry. In order to generate sales for the jacketing system, the product must be specified by either the Front End Engineering and Design (FEED) contractors further up the supply chain, who provide the solution directly to the end customer (asset owner), or EPC (Engineering Procurement and Commissioning (EPC) contractors who are next in the chain. However, the organisation deals directly with the insulation contractors who report to the EPC contractors. In this case, productisation has not had an influence on the organisation's position in the supply chain. In comparison, TBG work directly with the end customer and productisation has enabled them to deliver the complete solution. Productisation has simplified their position in the supply chain.

Table 7: Supply Chain

Differences	
B S Stainless supply products to the insulation contractor for construction. The supply chain for an oil or gas installation is complex. It consists of FEED contractors, EPC contractors and insulation contractors and the company needs to build relations with all of these.	TBG supply and install products to the end customer, working directly with the end customer.

Theme 7: How many of their products do they produce?
Both have held on to the high value part of their manufacturing, subcontracting some lower value components, although retaining management of product development.

Table 8: How many of their products do they produce?

Similarities
Both manufacture in house, mainly the products that they see as the higher quality, bespoke, specialist higher end. They sub-contract out some low value parts which could be made easily by a sub-contractor.

Theme 8: Challenges from adopting productisation
Both organisations cited costs as an issue when moving from being a service enterprise to a product-based enterprise. This was due to the higher overheads involved in a manufacturing operation (TBG) and the lack of transparency of these costs and how to work them into their overall business costs (B S Stainless). Although TBG's 'Op Ex' model worked for their customers, it was also an attempt to smooth out the cashflow within the business itself. B S Stainless have found that moving from a trading operation, with the emphasis on meeting short term targets challenging, as the lead time for securing orders for products is longer and less predictable. It requires resources up front with no guarantee of a return, although the returns more than pay for the initial outlay if the business is secured.

In addition to costs, both organisations cited challenges in obtaining access to suitable manufacturing skills within the UK.

Table 9: Challenges from adopting productisation

Similarities	Differences	
Both mention costs and cost control.	B S also mention the difference in lead times for securing product sales can be longer and more uncertain, although the larger margins may compensate for that overall.	Regarding cost control, TBG initially initiated the Op Ex model to manage their cash flow more effectively.
	They also mention how difficult it has been to find the appropriate skills that they needed in the UK in order to move into manufacturing, mentioning the commissioning of the machine specifically.	TBG have commented on the timescales required to develop manufacturing skills compared with other parts of their business. They develop people in systems integration through their apprenticeship and intern programmes, but prefer to recruit experienced manufacturing personnel.

Theme 9: Opportunities from adopting productisation
B S Stainless are now looking to expand their manufacturing capability. Their recent example of the slitting machine is again focused on improving value to the customer by reducing their costs and

increasing efficiencies in their manufacturing processes. TBG are also using their organisational knowledge as a base for diversifying their business and expanding into investing in new technologies to solve problems (an example being an alarm monitoring systems for ITU rooms in children's hospitals).

Table 10: Opportunities from adopting productisation

Similarities	Differences	
Both have evolved since to take on more complex projects. There seems to be a confidence that comes from being able to produce a complete productised solution which enables the companies to move onto more ambitious projects.	B S's confidence seems to be in developing newer and bigger projects, also incorporating more manufacturing opportunities, i.e. the purchase of a machine which will enable them to carry out slitting of much larger coils.	TBG also have moved into developing more complex R&D projects, which are potentially out of the scope of their current core business, but could either be developed as future business or licensed.

6. PRELIMINARY ANALYSIS

From the initial exploration of the nine themes, there are three main factors which appear to have influenced the outcome of productisation for the two organisations:

- How value is perceived in the post-productisation offering.
- The supply chain.
- The resulting opportunities for the organisation.

The perception of value appears to depend on whether it is embedded in the product or the service. In the case of B S Stainless, their product and/or processing performs a service for the customer, in that it reduces labour costs (metal jacketing system), or increases efficiencies (coil winding). In both cases, although a service is performed, the value is embodied in the product. For TBG, the value for the customer is embodied in the overall integrated system and service which is provided. The manufacture of a physical product contributes to this, but is not where the main value is supplied. It is therefore proposed that productisation is the optimum outcome for the first organisation, whereas servitisation (via a product-service system) is the optimal outcome for the second.

The supply chain also appears to be an important factor in whether productisation or servitisation is a suitable outcome for the organisations. As they are dealing directly with the end customer, and furthermore, supplying a complete integrated solution to them, it is argued that TBG are in a much stronger position to capitalise on, and further develop, a servitisation strategy. In contrast, B S Stainless are part of a far more fragmented supply chain, in that their customer is one step up the chain and not responsible for the complete solution. This limits the interaction to a product sales transaction. It is argued that their position limits the extent to which they could servitise their offering, which makes productisation the extent to which they can develop unless they can liaise more directly with the specifying contractors further up the supply chain. However, it is also notable that this represents a more recent development than TBG and to date, their priorities have been on developing their manufacturing capabilities.

This leads on to an examination of the outcomes for both organisations. It is particularly interesting to note how adopting a productisation approach against a service background had enabled the organisations to evolve further, in ways which both admit would have not been possible with a purely service-based approach. There appears to be an increase in the technical confidence of each organisation in its abilities to develop new technical competencies in succeed in larger, more ambitious

projects. In B S Stainless, this manifests itself in the development of further manufacturing capability. In TBG, this manifests itself in the undertaking of R&D projects. In both cases, this is increasing the value of the organisation and its activities. B S Stainless particularly associate status with the development and manufacturing of high-quality products.

7. CONCLUSIONS

This research set out to explore the motivations, mechanisms, benefits and outcomes for the two organisations. For both, the motivations were in the customer requirement, either perceived or explicit, yet an additional value to the organisation itself was also needed in order to make the move to productisation. The mechanism was productisation, acquired by accessing external resources to acquire the necessary skills. The benefits for the customer was the provision of products which provided solutions to problems. The outcome for both organisation is that both have used productisation to build on their current organisational knowledge and put them in a stronger position take on more complex challenges.

However, the organisations have subsequently evolved in different ways. B S Stainless now views itself as transforming into a production company. TBG Solutions has moved to offering different methods of ownership for customers, including leasing.

TBG has arguably been more successful in adopting servitisation practices, due to being placed within its industry supply chain to add more value to the customer as a systems integrator. However, for both organisations, the acquisition of productisation capability appears to have boosted the confidence to explore new R&D opportunities.

The findings highlight some potential benefits in adopting productisation practices alongside services in terms of organisational innovation, leading to a higher value output from each organisation.

However, there are limitations in this study. This is a preliminary comparison of two very small-scale studies. Such cases of service organisations adopting productisation practices are rare, particularly for SMEs. Consequently this represents a very small data set which cannot be externally generalised. However, as individual case studies, each represents a contribution to examples in this area.

In terms of further work, further analysis of these preliminary results is required in terms of how they fit in with existing models and theories of productisation and servitisation. The findings could be explored further to see whether they could be used to determine the factors which would influence productisation and/or servitisation amongst service-based SMEs. The role of productisation in raising the output value of SMEs is also worthy of further exploration. However, more suitable organisations need to be identified and further data is required for a more rigorous analysis.

REFERENCES

Baines, T., and H. Lightfoot. 2013. Made to Serve: How manufacturers can compete through servitization and product-service systems. Wiley: Chichester.

Boyatzis, R.E. 1998. Thematic analysis and code development: transforming qualitative information. Thousand Oaks: Sage.

Harkonen, J., H. Haapasalo, and K. Hanninen. 2015. Productisation: a review and research agenda. International Journal of Production Economics. 164:65-82.

Lahy, A., A.Q. Li, P. Found, A. Syntetos, M. Wilson, and N. Ayiomamitou. 2017. Developing a product-service system through a productisation strategy: a case from the 3PL industry. International Journal of Production Research. DOI:10.1080/00207543.2017.1367861.

MacBryde, J., S. Paton, and B. Clegg. 2013. Understanding high-value manufacturing in Scottish SMEs. International Journal of Operations and Production Management. 33:1579-1598.

Mountney, S., A. Asthana, K. Mohammed, and M. Almond. 2016. A preliminary investigation of the reverse service continuum. Universia Business Review. 49: 116-131.

Mountney, S., and P. Rawlinson. 2016. From 'guys writing software' to PSS: the evolution of an SME. In Proceedings of the 2016 Spring Servitisation Conference, ed. T. Baines, J.Burton, D. Harrison and J. Zokiewski, 199-207. Manchester, UK: Aston Business School.
OECD. 2007. Staying competitive in the global economy: moving up the value chain. OECD, Paris.
Tukker, A. 2004. Eight types of Product-Service System: Eight ways to sustainability? Experiences from SusProNet. Business Strategy and the Environment. 13: 246-260.
Vandermerwe, S., and J. Rada. 1988. Servitization of a business: adding value by adding services. European Management Journal. 6:4.316-324.
Vargo, S.L., and R. Lusch. (2004), Evolving to a new dominant logic for marketing. Journal of Marketing.68:1-17.

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