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A preliminary investigation of the reserve service continuum¹

Una investigación preliminar del continuo servicios



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I. INTRODUCTION

With concepts such as service-dominant logic, servitisation, productisation and product-service systems, it is now recognised that it is no longer relevant for organisations to be classified as being primarily product or service-based. Rather, they need to be examined from the point of view of their complete offering to the customer, which each of these definitions goes some way to providing.

One repeating narrative in the research is the journey that an organisation takes to develop its offering to the customer. A known approach is that of a product-based organisation developing services to augment this, known as servitisation. With the advent of global competition from developing economies with a much cheaper cost-base, it has been largely acknowledged that a servitised business model can add value for the customer and provide a method of differentiation.

There has been some acknowledgement of the productisation of services – that is, when a primarily service-based organisation moves into manufacturing. Typically this would be as part of an advanced services offering, where the main focus of the advanced services is on maintenance and overhaul, and the manufacturing limited to small scale spares. However, this has not been widely documented.

This research presents a case study of a service-based SME which, in the past two years, has begun to augment its main trading and



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EXECUTIVE SUMMARY

The paradigm of the organisation as service provider dominates current research. Most work focuses on the adoption of services by product-centred organisations, promoting the concept of a service continuum. This paper explores whether alternatives are possible, documenting a case study which apparently 'reverses' this continuum – a service-based SME which has developed in-house manufacturing capability to improve the customer solution. The findings suggest that this could develop the current understanding of servitisation, however further work is outlined to test this.

RESUMEN DEL ARTÍCULO

El paradigma de la organización como proveedora de servicios domina la investigación actual. La mayoría de los trabajos se centran en la adopción de servicios por organizaciones centradas en productos, promoviendo el concepto de continuo en servicios. Este artículo analiza otras alternativas, documentando un caso de estudio en el que aparentemente se invierte el continuo – una pyme de servicios que ha desarrollado capacidad de manufactura para mejorar la oferta al cliente. Los hallazgos sugieren que esto puede mejorar el conocimiento en servitización, aunque se necesite profundizar en este planteamiento.

customer service activities by moving into product development and building a manufacturing capability in-house. Given that few examples of this situation have been documented, the motivations and mechanisms for this transition have been examined. The findings are then interpreted according to the acknowledged definitions of productisation and servitisation. This first stage in an exploratory study has highlighted that the servitisation process could be further extended, and additional work is planned to investigate and confirm this.

2. BACKGROUND

Vandermerwe and Rada (1988) describe how the emphasis for industry has evolved to not differentiate their offerings as goods or services, but a combination of both, describing this as the 'servitisation of business'. The emerging service dominant logic, discussed by Vargo and Lusch, highlights how the emphasis on value creation is shifting from tangibles to intangibles, as operant resources such as knowledge and skills become the basis for new value creation (2004). In this environment, the view of services is widened and defined as 'the application of specialised competencies (knowledge and skills) through deeds, processes and performances for the benefit of another entity itself.' Physical goods have a role in this view, however rather than being a traded commodity, their value is embodied in the service that they provide to the customer.

Such a view supports the emergence of the servitised view for product-based organisations. Schmenner has presented a historical perspective to this, arguing that this has been a natural evolution for manufacturing-based services in order to form increasing links with their customers to gain advantage over competitors (2009).

Vandermerwe and Rada describe the process of servitisation as being on a continuum, moving from products, to supporting services, to self service and knowledge (for the customer). Other definitions of servitisation have also presented it as a continuum, with a pure product focus at one end of the continuum, and a pure service offering at the other. Tukker (2004) refers to these stages as being product oriented, use oriented and results oriented, with the offering moving from being owned by the customer, to the customer paying for use or access. This is referred to as a product-service-system, with particular benefits being in sustainability, as

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the supplier takes responsibility for reducing the through-life cycle cost and overall consumption. Baines and Lightfoot also refer to a continuum of base, intermediate and advanced services (2013). The product is central to all, but the service range, risk and revenue payment methods evolve throughout the continuum as the focus of provision moves from product only (base services) to '*outcome assurance*' (advanced services). Further benefits are therefore seen as being better value for the customer and risk reduction (Baines et al 2010). Servitisation has therefore been presented as a potential method of differentiation for manufacturing-based organisations in order to compete with lower-cost global competition (OECD 2007). Nonetheless, it has been recognised that such a business transformation can present a number of challenges to a 'traditional' product-based organisation.

In a recent example of research into manufacturing organisations adopting a servitised approach, Peillon et al discussed some of these challenges (2015). They investigated the servitisation path for a manufacturing organisation, creating a concept framework to align both the product and service-oriented production structures and testing it using a case study of a machine tools organisation. With reference to service dominant logic, they concluded that products and services become inseparable, leading them to question the results-based pure service extreme of the servitisation continuum. Consequently, they conclude that the results-based model (advanced services) may not be suitable, or desired by all organisations involved. It is important that the organisation does not lose its product-development related expertise, which could occur should it decide to move to a wholly service-oriented business model. The need for developing a more service-focussed culture, and the development of skills to support this, was also highlighted, although they also acknowledged a split between the service-based and product-based employees, due to the nature of the work undertaken.

In their original definition, Vandermerwe and Rada acknowledged that a servitised solution can be approached in either direction, from a manufacturer moving to incorporating services, or conversely from a service-based organisation moving towards manufacturing. With the former having been primarily adopted in the research literature as servitisation, the latter is now primarily referred to as productisation.

KEY WORDS

Productisation,
Servitisation, Service
organisation,
Manufacturing

PALABRAS CLAVE

Productización,
Servitización,
Organización de
servicios, Manufactura

In their extensive review, Harkonen et al define productisation as *'the process of analysing a need, defining and combining suitable elements, tangible and intangible, into a product-like object, which is standardised, repeatable and comprehensible'* (2015). They documented evidence of four types of productisation: the productisation of products, services, software and technology. In their findings, they found that 'productisation of products' can be differentiated from the usual new product development initiatives by the emphasis on commercialisation and meeting the need of the customer. However, they acknowledge that more cases of this type of productisation are needed in research.

It has also been adopted in the term *'productisation of services'*, applied to a case describe in Baines and Lightfoot (2013) and Baines et al (2011). Here, a repair and overhaul organisation engaged in the provision of advanced services developed a small-scale re-manufacturing capability to improve customer response. However, such ventures are seen as being few, and risky, with few organisations expressing an interest in developing them. Consequently, they have remained outside the main scope of research. That said, here productisation is seen as being a potential contributory element in a servitised approach.

The investigation and identification of organisations engaged in, or moving towards, *'productisation of services'* in terms of product development and manufacturing therefore presents an interesting research challenge. Who are these companies? What has motivated them to transform their businesses in this way and what are the mechanisms which have enabled them to achieve it? Furthermore, given their service-based history, what can organisations at the other side of the continuum – the product-based organisations aiming to servitise – learn from their experiences?

This paper documents a preliminary investigation in this area. It reports on an initial exploratory case study of such an organisation. The aims of the research are to report on the story of this organisation's transition and discuss how it fits in with existing research on productisation and servitisation.

3. THE CASE STUDY

BS Stainless was established in the UK in 1998. It is classified as a small company with 23 personnel and an estimated annual turnover of £13.1m. Until two years ago, its main activity was trading in stainless steel products, with some basic additional services, such as post-sales customer care and problem rectification. Some basic manufacturing operations – cutting, slitting and deburring - were added to cut and finish the stock to meet customer requirements, but trading was acknowledged to be the principle activity. The scope of this paper covers the more recent history of the organisation over the past two years. Recognising that the opportunities for increasing profit were limited as a trading organisation, other possibilities with customers were explored. The decision was made to move into product development, recognising an opportunity to develop a range of integrated jacketing solutions for the oil and gas industry. This would be achieved by acquiring the capability to manufacture the products in-house.

This has been achieved through a two-year Knowledge Transfer Partnership (KTP) with Sheffield Hallam University. This is a UK technology transfer initiative funded by the government through Innovate UK. An organisation and a university work in partnership on a project to develop an aspect of the business using a skills transfer that cannot be managed using its existing skills base (Innovate UK, 2015). Key personnel involved in the programme are the KTP Associate, a university-employed postgraduate who undertakes the project work in the organisation; an Academic Supervisor from the university and an Industrial Supervisor from the organisation.

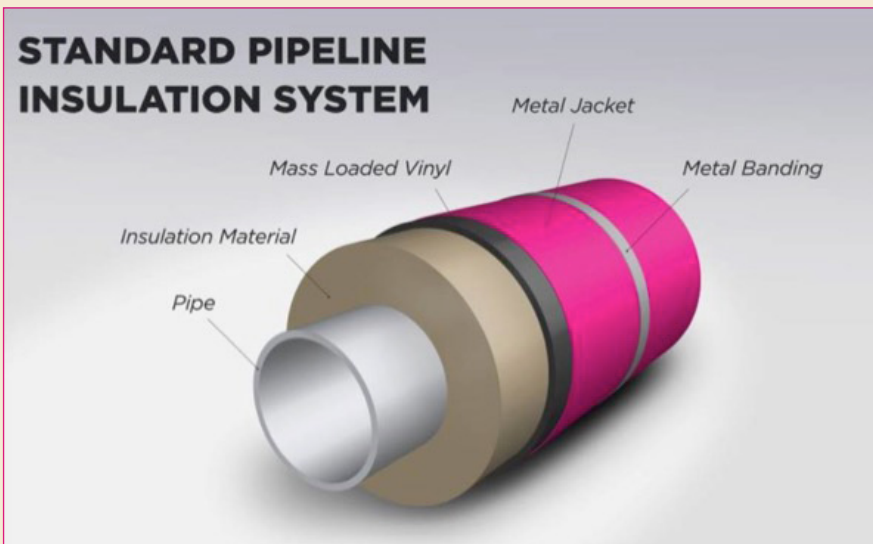
A jacketing system is an important part of the piping assembly installed at oil and gas installations. The piping is stainless steel, with an additional layer of vinyl-type or other proprietary material to reduce noise or maintain temperature. In a conventional installation, these are two separate layers, usually from different suppliers, which are supplied as a flat sheet or coil, assembled and held together with a band and clip. Through the product development work, the stainless steel sheet and additional layer have been integrated, removing the need for an assembly operation by the customer, reducing their labour costs, and also improved the quality of the product by preventing gaps in the assembly. An example jacketing system is shown in **figure 1**. As outcomes for the KTP, four new products have been developed – SoundMet®, an acoustic material



to reduce sound, CoolMet[®], to protect against high temperatures, DryMet[®] to prevent moisture ingress and TedMet[®]. Patents applications are in progress for two of these.

As a method of exploring more about how this situation arose, five semi-structured interviews were held with key members of the project, both from the organisation and from the university which partnered it. These interviews lasted up to an hour, were transcribed and yielded a rich source of data about the organisation and its recent journey.

Figure 1. **A jacketing system**

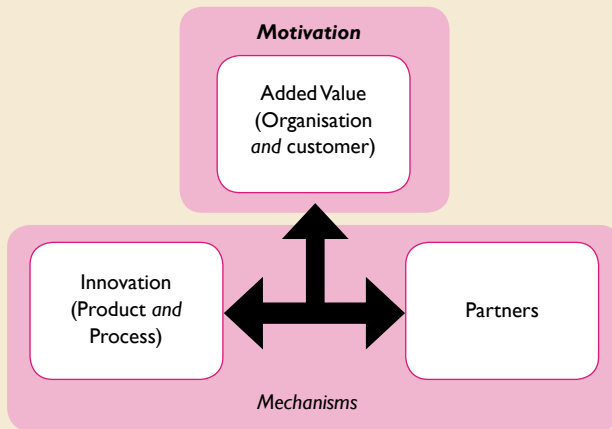


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The main themes common in all the interviews were then analysed. The results are shown in **figure 2**.

As can be seen in **figure 2**, three themes emerged from the data – value, innovation and partners. They are also related: value is seen as the main motivation for the move into product development, with innovation and partners being the main mechanisms by which this is achieved. Each theme is discussed in the following sub-sections.

Figure 2. The main identified themes and their relationships



3.1. Theme I: Value

Value describes ‘added value’ and it comes from three perspectives: added value according to the customer, the organisation, and for partners.

The organisation defines added value as an increased growth in sales, consequently they are seeking opportunities which will maximise this. However, this also has to be seen as added value for the customer – it’s a mutual benefit. Historically, the high level of service-based activities have been one of the main reasons why customers are attracted to the organisation. Although previously much of this increase in sales had been fuelled by trading opportunities, the organisation examined the meaning of added value for the customer beyond the remit of their usual activities.

Added value for the customer therefore came from the recognition that system solutions would fill a niche in the market (rather than individual components), and was something that wasn’t being performed by their competitors. It would also significantly reduce their customers’ labour costs by reducing the time for installation. This was the main rationale for moving into product development. They also saw the move into product development as an opportunity to launch a better quality product. Quality is a driver in this marketplace: reputations (and sales) can be destroyed if a customer has a poor product.

There was also evidence of added value for the external KTP partner, in terms of patents filed and related publications.

3.2. Theme 2: Innovation

Innovation - in terms of both product and process development - has been one critical mechanism for achieving the new added value for the customer as perceived by the organisation. In terms of product development, the organisation identified this opportunity and developed some initial product ideas, whilst recognising that they would need technical input from elsewhere (the KTP project) to realise them. In terms of process development, the organisation had a choice. It could have identified a sub-contractor to produce the products on its behalf. However, it decided to take the alternative route of developing the manufacturing capability and knowledge to produce the systems itself. There were three reasons for this. Firstly, they were limited by what they could achieve in terms of product development without having some facilities in place. They needed the capability to develop. Secondly, in-house development and product was seen as a guarantee of quality and IP protection. Although this project could be perceived as risky, this was seen as a risk mitigation activity. Finally, acquiring the capability was seen as an opportunity. It would increase the scope of what the organisation could do so that it could be used as a springboard to develop new products.

For both product and process development, there was an incremental approach to innovation in both areas, with smaller achievements in both product and process development contributing to the main developments. This was seen as instilling confidence and mitigating risk. Examples of this were the successful introduction of CE marking, the improved design of an existing product and the sequential development of the four main products which contributed to the success of the project. For process innovation, the organisation already had some very basic processes (cutting, slitting and deburring) which it had acquired incrementally in order to provide a manufacturing-based 'added service' for customers (cutting to size, removing sharp edges). The acquisition of manufacturing capability was seen as a natural step from this, although it was recognised that it was a much larger (and riskier) investment.

In order to mitigate this risk, it is interesting to notice how the acquisition of both product development and process development knowledge has instilled new confidence in the organisation, and that they are now seeking further product development opportunities, looking at ways in which they can use their manufacturing capability to produce new products.

A scale of innovation is also evident. For product development, it is recognised that slight incremental adaptive improvements are not enough to add value. The customer offering has to be a novel step and offer a definite advantage. An example is some design improvements which were made to the clip which holds the band in place in the installation. Its weight was reduced, but by itself, this development is viewed as being insufficient for a customer solution. It needed to be combined with others into an overall 'package' of innovation. For process development, therefore, the manufacturing capability acquired must be able to deal with more than one product range, to maximise innovation potential. Manufacturing capability has therefore been acquired to enable innovation to add value for the customer. It is not a goal in itself.

The innovations have also have a very strong brand, for two purposes – to increase their profile within the industry, and to protect intellectual property. This is demonstrated by the trademark and patent applications.

3.3. Theme 3: Partners

The term 'partner' is used in this paper to denote a knowledge partnership rather than a contractual partnership (although both could be the case). The organisation has shown a particular strength in establishing long-term partnerships with external organisations. These partnerships fall into four categories:

- 1) Customers and suppliers of other products, specifiers and engineers** - to better understand the market and particular challenges, enabling them to define where they can add value. This is reciprocal, as the organisation has informed them of progress and invited feedback on developments.
- 2) Suppliers of their own products** - to understand the way they work and where they can do something different, adding value to the customer (and to themselves).
- 3) Suppliers of coatings** - forming partnerships to develop process technology and testing resources.
- 4) External resources** - the technical expertise in order to move into product development has been 'bought in' through the KTP scheme and has been embedded in the organisation. Additionally, the organisation has now started to form partnerships with external funding organisations for future resource allocation.



These partnerships have been instrumental in enabling the organisation to acquire new knowledge and expertise, branch out from its remit of historical activities and achieve the innovation acquired to add customer value.

4. DISCUSSION

4.1. The Organisation

The organisation has been very market-driven in its approach to innovation, proving itself to be adept at seeking out the customer need and establishing the type of innovation – service and more latterly product – to fulfil this. The most interesting aspect of this case is that, having established their new market direction, the organisation decided to move into a new area of expertise and acquire the capability itself. They also proved to be extremely adept in forming external partnerships to enable them to achieve this capability.

Both of these strengths may stem from the customer focus that the organisation has developed, being traditionally service-based. Perhaps the size of the organisation has also played a part in this. Arguably it has a stronger need to identify customer needs and innovate to satisfy them, as this may impact on its survival more strongly than the larger production companies with whom it competes. It is interesting to note that the opportunity to develop the jacketing systems existed in the marketplace, but this organisation took the decision to be the innovators, rather than their larger, production-oriented competitors, who arguably may have been in a less risky position.

As the organisation has adopted a more product-focussed approach, the scope of activities it undertakes in order to add value has also widened, shown in **table 1**. Many of the ways in which value has been added is through the additional of operant resources such as additional skills and knowledge.

4.2. Discussion relating to productisation of products

From one perspective, this case could be interpreted as a case of a service organisation which is re-inventing itself as a product-based manufacturing organisation. However, the move to product development could be interpreted as an example of the productisation of products. This is particularly evident given the



Table 1. Changing scope of value-adding activities

BEFORE PRODUCT DEVELOPMENT	AFTER PRODUCT DEVELOPMENT
Short term About winning orders through trading Establishing good relationships with suppliers Establishing good and ongoing relationships with customers: - by being competitively priced - by supplying a good delivery service - by supplying a good product, cut to size where necessary. - by solving problems with product.	More medium-long term About winning orders through product development Establishing good relationships and ongoing IP based partnerships with suppliers. Establishing good and ongoing relationships with customers: - by being competitively priced - by supplying a good delivery service - by supplying a whole system solution which is an improvement on existing products, eliminates the need for operations performed by the customer and reduces their labour costs. - by developing deeper knowledge of products in the industry, thus developing solutions to customer requirements. - by forming partnerships with suppliers and other partners to establish and ongoing R&D activity. - by developing known and credible product brands.

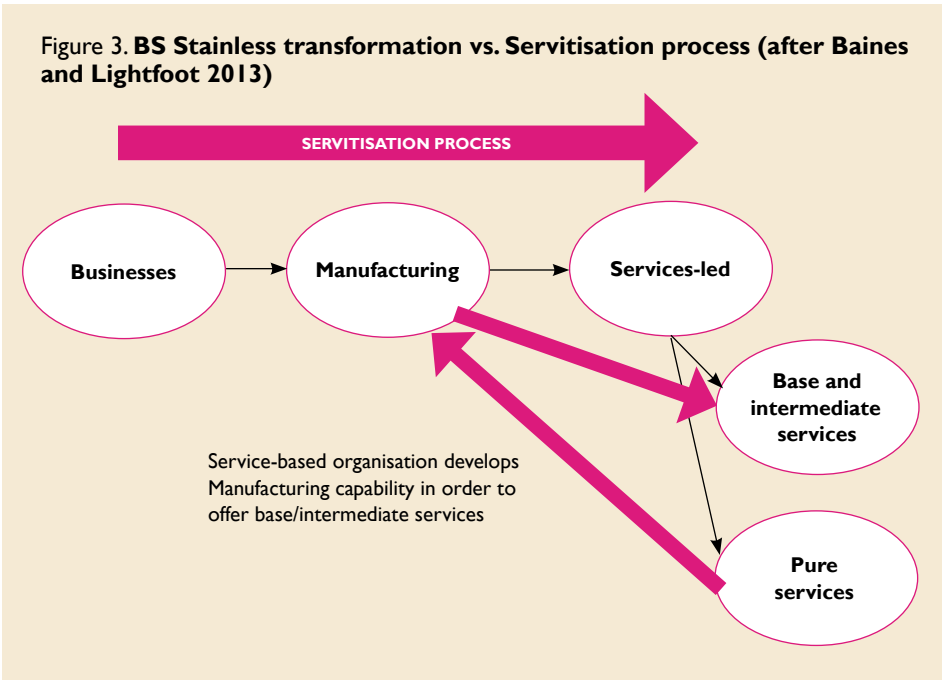
emphasis on the added value to be achieved by the innovation. The nature of the product itself is also important. The organisation developed an integrated product which presents value to the customer by eliminating the need for a manual assembly operation, thus reducing labour costs. Following the principles of service dominant logic, this product therefore also performs service for the customer. The additional acquisition of knowledge and skills resources as the organisation has transformed also supports this approach. This is the main goal of the organisation – the acquisition of manufacturing capability has been seen as the means to achieve this, not the main objective. This business transformation is equally as significant in terms of service provision as well as product provision. It must therefore be questioned if and how, this could fit within the defined servitised approach.

4.3. Discussion related to servitisation

The development of a systems solution to add mutual value for both the customer and the organisation has commonalities with characteristics of organisations which have engaged in servitisation. When compared to Baines and Lightfoot's range of service activities

(2013), it could be said that before this project, the organisation was involved in some base services activities – order processing and delivery, with some additional cutting to size and problem solving (which could move them into intermediate services). As a consequence of the project, it could be argued that they are now performing more intermediate services activities because their product has replaced some of the customer’s installation activities. The organisation could arguably develop their service offering further in addition to product development to move into intermediate or advanced services. However, they have no current plans to do so. Their focus is on ramping up to full production and launching the products in the marketplace. This would be an interesting area to explore with the organisation in the future.

Figure 3 summaries these findings. It is a diagram of the transformation for the organisation when compared against the servitisation process as described in Baines and Lightfoot (2013). From this, it is suggested that, for this case, the productisation of products has been a route to developing further services (when viewed in terms of a service dominant logic) - in this case, base and intermediate services.



These findings therefore raise the question: can servitisation for physical, manufactured products be approached from either direction - i.e. by a manufacturer adopting services, or by a service provider adopting productisation of product (i.e the reverse of the current services continuum)?

5. CONCLUSIONS AND RELEVANCE FOR THE BUSINESS COMMUNITY

Although the main servitisation literature focuses on the servitisation from the starting point of being product-based, it is also widely acknowledged that, in order to achieve servitisation or a product-service system, there must be a move towards service and product integration. This case shows that we need to consider whether productisation, if viewed as a service organisation adopting product realisation capabilities, can also contribute towards the process of servitisation. The relationship between servitisation and productisation and how productisation can contribute to the servitisation process should therefore be a subject of further research.

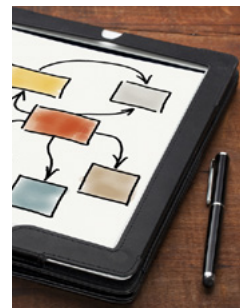
It is recognised that this work reports on one case and that the findings of this research are clearly at a very early stage and require further investigation and development. Data from other service-based manufacturing organisations is required in order to validate, augment and develop the findings.

This study raises other research questions for further investigation of the relationship between productisation and servitisation:

1. To what extent is service productisation prevalent?
2. How is it realised?
3. How does it contribute to the organisation's customer offerings?
4. How does it complement or diverge from the main themes of servitisation?
5. What can a servitising organisation learn from a productising one, and vice versa?

This paper has reported on the preliminary step in a planned research project. Two streams of future work are planned. The first stream is to establish a longitudinal relationship with this organisation to investigate whether they move to a more servitised approach in the medium-long term, or take an alternative direction.

The second stream of work is to establish contact with other SMEs who have moved from service to manufacturing to build a compa-



rative case study analysis. The aim is to build up a picture of the transformation and challenges taking place within organisations of this type in order to investigate the research questions which have emerged from this case. Work is due to commence with a second candidate shortly, and a third has been identified.

Over time, research could also be expanded to examine whether the findings are also relevant to larger and more complex organisations, or whether they are predominant in smaller organisations.

Organisations which choose to transform in this way are unusual and novel, reversing the current main narrative of the product-service continuum. Therefore, finding and investigating these organisations and examining their motivations and mechanisms for transfer are important. If they are confirmed as being part of a move to servitisation, then this illustrates another means by which it can be achieved.

This paper has documented an example of the productisation of products where the organisation has moved from service provision to product development and manufacturing. It has discussed how these products are providing a service to the customer by eliminating the need for a separate assembly activity, thus reducing cost and time in installation. It has concluded that there is a need to further explore productisation within the context of servitisation and whether both can complement each other in delivering customer value. A further research requirement in this area has been highlighted.



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NOTES

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