A preliminary investigation of the reserve service continuum

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1. INTRODUCTION

With concepts: such as service-dominant logic, servitisation, production tisation and product-service systems, it is now Recognised That it is Relevant for no longer to be classified as Organisations 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 organ- Takes to Develop ITS nisation offering to the customer. A Known APROach Is That of a product-based organization Developing Services to esta augment, Known as servitisation. With the advent of the global com- petition from developing economies with a much cheaper cost-base, Largely it has - been Acknowledged That business model to servitised can add value for the customer and Provide a method of differentia- tion.

There has - been some acknowledgment of the productisation of ser- Vices - That is, When a service-based organization Primarily moves into manufacturing. Typically esta would be as part of an advanced offering services, Where the main focus of the advanced services is on maintenance and overhaul, and the manufacturing limited to small scale spares. However, esta have not Been Widely documented. This research presents a case study of a service-based SME Which, in the past two years, you’ve Begun to augment STI main trading and Received: 30 November 2015. Accepted: 14 January 2016

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EXECUTIVE SUMMARY
The paradigm of the organization as service provider dominates current research. Most work focuses on the adoption of services by product-centered Organizations, Promoting the concept of a service continuum. This paper explores alternatives are possible Whether, documenting Apparently a case study Which 'reverses' this continuum - a service-based SME Which you developed in-house manufacturing capability to Improve the customer solution. The findings Suggest That This Could the current understanding of Develop servitisation, however further work esta is outlined to test.

SUMMARY OF THE ARTICLE
The paradigm of the organization as a service provider dominates research current. Most studies focus on the adoption of services by organizations centric products, promoting the concept of continuous services. This article analyzes alternatives, documenting a case study in which apparently reverses the continuous - an SME service that has developed manufacturing capacity to improve customer offerings. The findings suggest that this may improve servitización knowledge, but you needed further this approach.

customer service activities by moving into product development and building a manufacturing capability in-house. Given That few examples of esta Have Been documented situation, the motivations and Mechanisms for transition esta Have Been Examined. The findings are Then Interpreted ACCORDING TO Acknowledged the definitions of productisation and servitisation. This first stage in an exploratory study That has Highlighted the process servitisation Could be further extended ded, and additional work is planned to investigate and confirm esta.
2. BACKGROUND
Vandermerwe and Rada (1988) describes 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, Vargo and Lusch Discussed by, highlights how the emphasis on value creation is shifting from tangible to intangible, as operand. Such resources as knowledge and skills become the new value basis for creation (2004). In this environment, the view of services widened and is 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 They are embodied in the service to the that they provide 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 increase increasing links form With their customers to gain advantage over competitors (2009). Rada Vandermerwe and describes the process of servitisation as being on a continuum, moving from products, to supporting services, to self-service and knowledge (for the customer). Other present definitions of servitisation have presented it as a continuum, pure product with a focus at one end of the continuum, and a puree 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 access or use. This is referred to as a product-service-system, with benefits including being in sustainability, as

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KEY WORDS
Productisation,
Servitisation, Service
organization,
Manufacturing

**KEYWORDS**
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Services, Manufacturing

the supplier Takes Responsibility for Reducing the through-life cycle
cost and overall consumption. Baines and Lightfoot Also refer to
a continuum of basic, intermediate and advanced services (2013).
The core product is to all, but the service range, risk and revenue
THROUGHOUT the payment methods evolve continuum as the focus
of provision moves from product only (basic services) to *outcome
assurance* *(advanced services)*. Further benefits are seen THEREFORE
as being better value for the customer and risk reduction (Baines et
al 2010). THEREFORE Servitisation has presented as a potential Been
method of differentiation for manufacturing-based Organisations
Overall in order to compete With lower-cost competition (OECD
2007). Nonetheless, it has - been Recognised That Such a business
transformation can present a number of challenges to a *traditional*
product-based organization.

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 path servitisation
for a manufacturing organization, creating a concept framework to
Both align the product and service-oriented production structures
and testing it using a case study of a machine tools organization.
With reference to service dominant logic, They Concluded That
products and services Become inseparable, leading them to
question the results-based service puree extreme of the servitisation
continuum. Consequently, the results That They close up commercial -based
model (advanced services) May not be suitable, or Desired by all
Organisations Involved. It is Important That the organization does not
lose its product-development related expertise, Which Could Occur
Should it decides to move to a service-oriented business wholly
model. The need for more service-Developing a culture focussed,
and the development of skills to support esta, was Highlighted Also,
They Also, Although Acknowledged to 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 can be a solution servitised Approached in Either direction, from
Incorporating a manufacturer moving to services, or conversely
from a service-based organization moving towards manufacturing. With the former Having Been Primarily in the research ADOPTED servitisation as literature, the Latter is now Primarily Referred to as productisation.

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In Their EXTENSIVE review, Harkonen et al defined as productisation 'the process of analyzing 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 commercialization and meeting the need of the customer. However, They acknowledge That more cases of type esta of productisation are needed in research.

It has Also Been ADOPTED in the term 'productisation of services' applied to a case described in Baines and Lightfoot (2013) and Baines et al (2011). Here, to repair and overhaul organization engaged in the provision of advanced services developed to Small-scale re-manufacturing capability to Improve customer response. However, Such ventures are seen as being few, and risky, with Organisations expressing an interest few 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 THEREFORE development and manufacturing presents an interesting research challenge. Who are these companies? What has motivated Their Businesses to transform them 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 esta area. Item reports on an initial exploratory case study of an organization Such. The Aims of the research are to report on the story of esta organization'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 annual turnover estimated at £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 the paper covers the more recent history of the organization over the past two years. Recognizing the opportunities for increasing limited profit as a trading organization, other possibilities were explored. The decision was made to move into product development, recognizing an opportunity to develop a range of integrated 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 organization and a university work in partnership on a project to an aspect of the business using 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 organization; an Academic Supervisor from the university and an Industrial supervisor from the organization.

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 materials to maintain or reduce noise temperature. In a conventional installation, these are two separate layers, from different suppliers. Usually, 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 labor costs, and improving the quality of the preventative product by gaps in the assembly. An example jacketing system is shown in figure 1. As outcomes for the KTP, four new products - SoundMet®, an acoustic materials...
A jacketing system 1. Figure
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 esta situation Arrose,
five semi-structured interviews with key held Were members of the
project, Both from the organization and from the university Which
partnered it. These interviews Lasted up to an hour, transcribed Were
and yielded a rich source of data About the organization and Its
recent journey.

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The main themes common in all the interviews Were then a 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 esta
is Achieved. Each theme is Discussed in the following sub-sections.

3.1.Theme 1: Value

Value describe 'added value' and it comes from three perspectives:
ACCORDING added value the customer, the organization, and for part-
ners. The organization defines as an added value Increased growth in sa-
them, They are consequently seeking Which will maximize Opportunities
is This. However, esta Also has to be seen as added value for the
customer - it's a mutual benefit. Historically, the high level of serv-
ce-based activities Have Been one of the main Reasons Why cus-
mers are Attracted to the organization. Previously , Although much of
Increase in sales esta HAD Been fueled by trading Opportunities, the
Examined organization 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 was not being per-Their FORMED by competitors. It would Significantly reduces Their Past customers’ labor costs by Reducing the time for installation. Este 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 esta marketplace: reputations (and sales) can be destroyed if a customer has to poor product.

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

Motivation
Added Value
(Organisation and customer)
Innovation
(Product and Process)
Partners
Mechanisms

Figure 2. The main themes Identified and Their relationships

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3.2.Theme 2: Innovation

Innovation - in terms of product and process development Both - you Been one critical mechanism for Achieving the new added value for the customer as perceived by the organization. In terms of product development, the organization Identified esta opportunity and Devel-oped 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 organization had a choice. Item Could have a sub-contractor Identified to produce the products on ITS behalf. However, it Decided to take the alternative route of Devel-oping the manufacturing capability and knowledge to produce the systems itself. There Were Three Reasons for This. Firstly, They Were They 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 product development and was seen as a guarantee of quality and IP protection. Could project, Although esta be perceived as risky, was seen as a esta risk mitigation activity. fi-nally, acquiring the capability was seen as an opportunity. It would Increase the scope of what the organization Could do it so That Could
be used as a springboard to Develop new products.
For Both product and process development, there was an increments such approach to innovation in Both areas, with smaller achievements Both in product and process development Contributing to the main Developments. This was seen as instilling confidence and mitigating risk. Examples of esta Were the successful introduction of EC framework king, 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 organization 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 natural step From this, it was Recognised That , Although it was a much larger (and riskier) investment.
In order to mitigate risk esta, it is interesting to notice how the acquisition of Both product development and process development knowledge has instilled new confidence in the organization, and That They are now seeking further product development Opportunities, They are looking at ways in Which They can use Their manufacturing capability to produce new products.

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A scale of innovation is evident Present. For product development, it That is Recognised slight improvements are incremental adaptive not enough to add value. The customer offering has to be a novel step and offer a definite advantage. An example is some design im-
Which Were improvements made to the clip Which holds the band in place in the installation. Its weight was reduced, but by itself, esta 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 acquired capability must be more reliable than to Deal with one product range, to Maximise potential innovation. Manufacturing capability Been THEREFORE has 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 - Increase to 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 esta paper to denote a knowledge partnership rather than a contractual partnership (Both , Although Could
be the case). The organization has shown strength owners in establishing long-term partnerships with external organizations. These partnerships fall into four categories:

1) **Customers and suppliers of other products, specifiers and engineers** - to better understand the market and particularly challenges, enabling them to define where they can add value. This is reciprocal, as the organization 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 organization. Additionally, the organization has now started to form partnerships with organizations external funding for future resource allocation.

4. DISCUSSION

4.1. The Organization

The organization has been in very market-driven approach to its innovation, proving itself to be adept at seeking out the customer establishing the need and type of innovation - service and more latterly product - to fulfill the case. The most interesting aspect of that case is, having established their new market direction, they 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 stem from the may that customer focus the organization has developed, being traditionally service-based. Perhaps the size of the organization have played a part in past este. Arguably it has a stronger need to identify customer needs and innovate to satisfy them, as its impact on 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 esta organization
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 organization has a more product-adopted focussed approach,
the scope of activities it undertakes in order to add value've past
widened, shown in Table 1. Many of the ways in which value has
been added through the additional of operant resources: such as
additional skills and knowledge.

4.2. Discussion relating to productisation of products
From one perspective, this could be interpreted as case to case
of a service organization which is re-inventing itself as a product-
based manufacturing organization. However, the move to
could be interpreted product development as an example of the
productisation of products. This is evident particularly given the
emphasis on the added value to be achieved by the innovation.

The nature of the product itself también está importante. The organization
which developed an integrated product presents value to the
customer by eliminating the need for it to manual assembly operation,
thus reducing labor costs. Following the principles of service
dominant logic, this product performs service for past therefore
the customer. The additional acquisition of knowledge and skills
resources as the organization has transformed also supports esta
approach. This is the main goal of the organization - 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 be questioned therefore 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 organization has commonalities with
characteristics of organisations which have engaged in servitisation.
When compared to baines and lightfoot's range of service activities
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 supply supplying a good delivery service
- By supply supplying a good product, cut to size
Where Necessary.
- By solving problems with product.

More medium-long term

Establishing good relationships and ongoing

About winning orders through product development

Establishing good relationships and ongoing
With partners based IP suppliers.

Establishing good relationships and ongoing
With customers:
- By being competitively priced
- By supply supplying a good delivery service
- By supply supplying a whole system solution
Which is an improvement on Existing products, Eliminates the need for operations Performed by the customer and you reduce Their labor costs.
- By Developing deeper knowledge of products in the industry, THUS Developing solutions to customer requirements.
- By forming partnerships and suppliers With other partners to Establish R & D and ongoing activity.
- By Developing Known and credible product brands.

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(2013), it Could Be Said That Before This project, the organization Involved was based services in some activities - order processing and delivery, with some additional cutting to size and problem solving (Which Could move them into intermediate services). As to consequence of the project, Could Be Argued That it They are now performing more intermediate services Because Their activities Replaced product has some of the customer's installation activities. The organization Could Develop Their service offering arguably further in Addition to product development to move into intermediate or advanced services. However, They have no current plans to do SW. 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 organization in the future.

**Figure 3** These findings summaries. It is a diagram of the
When transformation for the organization Compared Against the servitisation process as described in Baines and Lightfoot (2013). From this, it is Suggested That, for esta case, the productisation of products has - been to route to Developing further services (when viewed in terms of a service dominant logic) - In This case, basis and intermediate services.

Figure 3. **BS Stainless transformation vs. Servitisation process (after Baines and Lightfoot 2013)**

**Businesses**
**Manufacturing**
**Services-led**
**Base and intermediate services**
**Mashed potatoes services**

**SERVITISATION PROCESS**
Service-based organization Develops Manufacturing capability in order to offer base / intermediate services

These findings raise the question THEREFORE: can servitisation for physical, manufactured products be Approached from Either direction - ie by a manufacturer Adopting services, or by a service Adopting productisation provider of product (ie 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 Widely Past 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 we need to Consider That Whether productisation, if viewed as a service organization Adopting product realization capabilities, can Also Contribute towards the process of servitisation. The relationship Between servitisation and productisation and how can Contribute to the productisation THEREFORE process servitisation Should be a subject of further research.
It is recognised that this work reports on one case and that the findings of research are at a very early stage and requires further investigation and development. Data from other service organisations based manufacturing is required in order to validate, develop and augment the findings. This research study raises other 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 servitising organisations learn from a productising one, and vice versa?

This paper has reported almost 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 comparative page 15

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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 larger and more relevant to complex organisations, or whether they are in smaller organisations. Which organisations choose to transform are unusual in this way 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 transformation 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 where the organization has products moved from service provision to product development and manufacturing. It has discussed how these products are providing a service to the customer by eliminat-
ing the need for a separate assembly activity, THUS Reducing cost and
time in installation. It has Concluded That there is a need to further
Within the context explore productisation of servitisation and Whether
Both can complement each other in delivering customer value. A fur-
In This requirement ther research area Highlighted has-been.

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