RESOURCE INTEGRATION USING SELF-SERVICE TECHNOLOGY: THE CUSTOMER PERSPECTIVE

INTRODUCTION
A new focus on customer value has been provided by Vargo and Lusch’s 2004 paper and subsequent work on service-dominant logic (Lusch and Vargo, 2006; Vargo and Lusch, 2008a, 2008b, 2008c) which has stimulated thinking on value co-creation between customer and supplier. This new thinking has gone well beyond the marketing discipline and is influential in the newly emerging field of service science (Maglio and Spohrer, 2008). However, to date there has been little empirical research on how customers engage with co-creation of value (Payne, Storbacka and Frow, 2008). In this paper we apply service-dominant logic (S-DL) as a theoretical lens to look at the application of self service technology (SST) in customer service. This is a very practical topic impacting on business and public service organisations everywhere.

RESOURCE INTEGRATION AT THE SELF-SERVICE INTERFACE
Previous work on resource integration has tended to focus on the resource integration activities either of customers (Arnould et al. 2006; Baron and Harris 2008) or organizations (Brodie et al. 2006; Lusch et al. 2008; Barnes et al. 2009). Our interest is in how these come together where the interface with the customer is provided by technology rather than by being provided by the organization’s staff. This has significant implications in terms of the location of tacit knowledge in the process, as illustrated in Figures 1 and 2.

Figure 1 The traditional interface

<table>
<thead>
<tr>
<th>Customer</th>
<th>Interface</th>
<th>Staff (Using tacit knowledge)</th>
<th>Technology (Containing explicit knowledge)</th>
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Figure 2 The self-service interface

<table>
<thead>
<tr>
<th>Customer (Using tacit knowledge)</th>
<th>Interface</th>
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In using SST a supplier organization can be seen to be substituting the often tacit and specialised knowledge of staff with that of the customer, who is likely to be less knowledgeable and less experienced in the company’s systems. A well-trained staff member provides a specialist source of tacit knowledge. As Frei (2008) notes, companies have more control over employers than customers and customers are harder to train, so tasks need to be dramatically simplified if they are to be taken out of the hands of staff. Hence the increased importance of the explicit knowledge, that is embedded in the SST. Furthermore, the degree of knowledge required of the customer can be seen to be inversely related to the simplicity of the SSL interface.

CUSTOMER RESOURCES IN USING SST
The emphasis on the role of the customer as co-producer in using SST and the substitution of the supplier’s tacit knowledge for that of the customer highlights the issue of what resources customers bring to the process. Table 1 summarises our review of the range of resources that customers may call upon in using SST:

**Table 1: Customer resources in using SST**

<table>
<thead>
<tr>
<th>Type of resource</th>
<th>Examples</th>
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</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>Functional knowledge, product or service knowledge</td>
</tr>
<tr>
<td>Attitudinal</td>
<td>Motivations, past behaviour and experience</td>
</tr>
<tr>
<td>Relationship</td>
<td>Family, consumer tribe, commercial and professional relationships</td>
</tr>
<tr>
<td>Physical</td>
<td>Perceptive ability, strength, energy, dexterity</td>
</tr>
<tr>
<td>Material</td>
<td>ICT hardware/software, credit/debit card</td>
</tr>
</tbody>
</table>

Source: Authors’ interpretation of the literature

The cognitive resources available to the individual will impact on the way the individual approaches and interacts with technology. This covers both functional knowledge (e.g., ability to use the technology, follow instructions, and perform operations) and specific knowledge about the service or product being accessed. In terms of functional knowledge, Davis’s (1989) Technology Acceptance Model (TAM) is well established and shows that individuals have varying degrees of capability in using new technologies. Jayasimha and Nargundkar (2006) argue that the functionally illiterate will undergo significant emotional cost in trying out SST and therefore will avoid using the SST if possible. It would be wrong, though, to consider cognitive ability on its own in seeking to understand resources that the customer draws upon in using SST. From the TAM model onwards it has been recognised that willingness is as important as capability in using SST. Hence attitudinal factors are integral to the individual’s experience in usage of SST (Bateson, 1985; Dabholker, and Bagozzi, 2002; Meuter et al. 2003; Elliott and Hall, 2005). Various empirical studies into customer behaviour have yielded a clear distinction between affective and cognitive components of attitude (Olson and Zanna, 1993; Crites et al. 1994; Crano and Prislin, 2006). Indeed, a number of these studies have suggested that affective components or antecedents of attitude constitute the primary influence on overall attitude (Batra and Stayman, 1990; Edwards, 1990; Cervellon and Dube, 2002; Huskinson and Haddock, 2004; Bakamitsos, 2006). Another attitudinal factor is the importance of experience and its impact on behaviour. Conative models of customer behaviour suggest that past behaviour may directly influence future behaviour, through the development of automatic responses as a result of experience (Ouelette and Wood, 1998; Leone et al., 1999; Verplanken and Aarts, 1999). The rest of the resource inputs identified in Table 1 are termed “relationship, physical and material”, as identified by Arnould et al. (2006).

**CONCEPTUAL FRAMEWORK AND RESEARCH OBJECTIVES**

Based on the foregoing discussion of the literature we have developed a conceptual framework of the elements involved in the SST resource integration process. The supplier organisation can be seen to provide operand resources in the form of the technological interface and support system. In addition, third party suppliers’ systems will often interconnect with the system, where they are involved in the value chain (for example tickets may be ordered using SST, but a third party company might be responsible for the payment system).
Interaction is required for integration to take place. However, we need to look further than the interaction to fully understand the co-creation of value. It is the human and social experience resulting from the interaction that determines the evaluation of value (Ramaswamy, 2010) and therefore we need to understand more about the experiences of the actors within the integrating process (Lemke at al. 2010).

RESEARCH METHOD
Qualitative research to investigate the customer experience of resource integration in using SST was conducted by the authors of this paper in the south east and south west of England during 2010. It comprised 24 qualitative interviews, with the interviewees recruited to cover a range of ages and socio-economic groups (see Appendix). The data collection, coding, sorting and analysis were carefully controlled (Miles and Huberman, 1994) throughout. The lead author of this paper coordinated the interviews, putting in place research protocols and processes to ensure dependable and confirmable findings (Lincoln and Guba, 1985). A semi-structured interview guide was used in conducting the interviews, as recommended for getting information in some depth (Easterby-Smith et al. 1991). All interviewees were conducted face-to-face and were recorded and transcribed. Analysis of the interviewees was facilitated through the use of NVIVO software.

FINDINGS
A well designed system that works effectively (a company supplied operand resource, see Figure 3) can provide a very satisfactory service encounter:

-For instance, I just renewed my driving licence – at 70 you have to renew it. They used my passport details to pick up my picture. I thought that was very good. Their ability to link up systems made it very simple to do on-line. I didn’t have to get a new picture done. From the passport number they identified you and then picked up your picture. (Ted, AB, 65+).
In this example the customer is providing the operant resource working on operand resources provided by himself (his computer), the supplier organization (the technological interface) and third party organizations (the passport office, the post office) to successfully co-create value using SST. A major distinction is apparent between situations where the SST is ‘in situ’, with the servicescape being provided and maintained by the supplying organization, and where it is remote and separate from the supplier (for example, using a PC at home). In discussing their attitude to SST, many of the interviewees talked about the social anxiety (a customer attitudinal resource, see Figure 3) they experience in using in-situ SST:

-You are in the limelight, it is almost a performance and you are expected to perform fast and efficiently and if you can’t for whatever reason, everyone blames you even, even if it is not your fault. (Mary, DE, 45-64).
-You have to get someone’s attention and they have run off to get the right barcodes, so that adds a bit of time, and then you are just conscious of the other people waiting behind. (Tom, C1C2, 18-29).

In-situ, the servicescape (see Figure 3) can be seen to include the physical kit and the layout of the hardware, which may not work as effectively as customers would like:

-I have had a few incidences where um, like the card reader wasn’t working in the supermarkets; it has been a bit annoying. (Jack, C1C2, 18-29).
-I haven’t even thought about it till this moment, so there isn’t enough room to place your items and then put them into something…. then you have only got hanging baskets to pop them into, that’s the difference, yes. (Jean, C1C2, 45-64).
-I try to use self-serving checkouts cause I don’t buy much. I just buy a few things so I try to use the self-serving checkouts and I’d say one in every three times there is some sort of anomaly that it doesn’t work properly. (Ben, C1C2, 18-29).

In this situation, members of staff are often drawn in to provide an operant resource in relation to service recovery (see Figure 3), made necessary by the limited ability of the customer or the ineffective operational capability of the equipment:

-I hate it mainly is because the machine often broke down and you know, you are not very competent in using it sometimes as well, like um especially when you buy loose vegetables or anything like that, you are trying to get the machine to weigh it and then it then gets jammed, or something like that, and you always have to ask an assistant, all the time like. (Helen, AB, 30-44).

As highlighted above, staff may play a significant role where the SST is in-situ, providing education/encouragement/support to facilitate the use of the SST by the customer or even intervening directly to sort out problems. An issue here relates to the availability of sufficient support staff and also the way members of staff interact with customers and in turn how they make customers feel. Two contrasting experiences are outlined below:

-I did it exactly as she had done it, and it just simply wouldn’t scan with me and I tried it several times and it wouldn’t and she was doing it painstakingly slowly, as if I was really stupid and, you know, couldn’t take it in... I don’t know why, but of course everybody behind me because she was acting like that, they all thought I was stupid too..... I would never, never ever, ever do it again. (Mary, DE, 45-64).

-When I went there, I saw the young lady who approached me, ‘Sir, there’s no need to queue, can I show you the new machine here’..... She stands me in front of the machine. She says: ‘you come here and I’ll show you. Put your thing here and press this and then’,
Yeah my money’s gone through and I got the receipt and it was all fine. And now I know I don’t need to queue. (Matt, DE, 30-44).

The absence of staff in remote SST may be seen as a problem when advice is needed and the customer feels the need to ask questions:

-For example, when I go online you miss out on the expertise of the salesperson and, if it is a product you are not very knowledgeable about, you’re less likely to buy it online. (Neil, AB, 18-29).

The bottom line seems to be that when things go wrong there needs to be a way of talking to a person for service recovery (staff as an operant resource, as depicted in Figure 3):

-There has always got to be someone at the end of it. A person that you can speak to or somewhere you can go up to the bank and speak to. (Fiona, C1C2, 30-44).

In a pure self-service situation the operant resources provided by the customer are sufficient to conduct the transaction. However, in many situations the customer resource needs to be supplemented by staff, acting with the customer.

CONCLUSIONS AND IMPLICATIONS

The contribution of this paper has been in taking a new body of theory (S-DL) and adapting it to provide a novel analysis of a particular context (SST). SST can be seen to transform the service process changing the organization’s role from providing operant resources (staff using tacit knowledge) into providing operand resources (explicit knowledge encoded into the customer interface). In using SST, customers provide the operant resources. However, this ‘pure’ model is often modified in practice because the customer is unable or unwilling to provide the required resources. In this case the organization has to step in to facilitate the customer in making the transaction, reverting to supplying a proportion or even the whole of the operant resource input.

A significant implication of the move to SST relates to the role of the ‘people’ element of the services marketing mix. Services marketing theory has long recognised the importance of ‘people’ (staff) in successful service delivery. The move to the primary operant role being played by the customer in SST can be seen to have significant implications for the role that staff might play in customer service. While firms may be attracted by the promise of lowering the number of customer service staff through the implementation of SST, there is a danger that they are overestimating the motivation and ability of many of their customers to provide the operant resource unaided. To some extent the service supplier can help the customer through careful design of the systems aspects of the interface. However, it is equally important to provide staff to supplement the attitudinal, cognitive, relational and physical resources of different customers. A major change here is in the role of staff moving from primarily operational to primarily customer support. In many cases this will require the development of new skills and abilities.

Cross-disciplinary work might usefully help to unravel some of the complexity of customer behaviour in relation to SST, building on current work on human computer interaction in areas such as internet skills (Van Deursan and Van Dijk, 2009); the needs of older people (Karahasanovic, et al. 2009) and illiterate populations (Lalji, and Good, 2008). The qualitative findings reported in this paper, demonstrate the importance of the attitudinal and motivational aspects relating to the customer as an operant resource, as well as the more straightforward cognitive aspects.
REFERENCES


Verplanken, B. and Aarts, H. (1999). ‘Habit, attitude, and planned behaviour: Is habit an empty construct or an interesting case of goal-directed automaticity?’, *European Journal*
APPENDIX

<table>
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<tr>
<th>AGE</th>
<th>18-29</th>
<th>30-44</th>
<th>45-64</th>
<th>65+</th>
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<tr>
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<tr>
<td>AB</td>
<td>X</td>
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<td>C1C2</td>
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