

# **Customers and service productivity: tackling the challenges with service improvement**

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## **Abstract**

The library service must reduce its costs by 30%, yet customer expectations are increasing - these appear mutually exclusive. Service managers can tackle these challenges with service productivity, IT-enabled change and service improvement. This research explores how the library met its funding challenges, improved productivity and enhances the service concept.

**Key words:** Service Productivity, Public Service, Service Improvement

## **Introduction**

Service Operations managers are challenged to improve process efficiency, use fewer resources and maintain/improve effectiveness of processes. Existing service system design principles suggest excluding customers from parts of the service process to maintain process efficiency (Chase 1978; Chase 1981). Current service operations theory in service process design aims to restrict customer interaction to maintain process efficiency. Marketing theory (Vargo and Lusch 2004) and practice suggests customer's Co-Produce their one service, often enabled by Self-Service. This involves enabling the customer to complete tasks that the service worker did – the customer becomes an employee in their own service experience.

## **Customer co-production**

Service processes need customer interaction, for this research a service operations definition of the concept of co-production and operationalization with metrics will be required.

Customer Co-Production is defined through the Unified Service Theory (UST) as customer labour inputs into the service process (Sampson and Froehle 2006; Sampson 2010; Sampson,

Bone et al. 2010). Customer intensity is the degree of all customer labour input into the service process, so the more Co-Production (customer labour inputs) the greater the customer intensity. Customer-self inputs are common in services involving co-production (i.e., the employment of customer labour in the process) and in services involving the physical presence of the customer.

(Meuter, Ostrom et al. 2000) show that in designing the use of self-service technologies customer readiness variables of role clarity, motivation and ability are factors in customers accepting use of self-service. Self-service can enable process efficiency and make effective use of customer resources improving the competitiveness of the service firm.

Customer interaction can create competitive quality and value, a conceptual model (Lengnick-Hall 1996) defines customer roles in the service transformation as; a resource, co-producer, user, product and buyer. Lengnick-Hall's definition of co-production was the customer as worker (Gersuny and Rosengren 1973) in the service process, carefully controlled to ensure efficient and effective service. Lovelock and Young (1979) stress the importance of involving customers in service to engage them in an active role, this removes service process tasks and reduces the customers time and costs. They pose questions for identifying opportunities to improve productivity, relating customer roles in service processes to mutual productivity benefits. Bitner, Faranda et al. (1997) explored customer participation and identified three customer roles; the customer as productive resource; the customer as contributor to quality, satisfaction and value; and the customer as competitor to the service organization. The customer role as a resource is categorised into low, medium and high physical presence. The importance of designing customer roles for service productivity and benefits is a consistent theme in this literature. How the roles support or hinder service process efficiency are not explicitly stated in the literature.

Customer Co-Production is stated in fundamental premise 6 in the Service Dominant Logic literature (Vargo and Lusch 2004; Lusch and Vargo 2006; Vargo and Lusch 2008). The customer is always a co-producer of service, with the customer role being an operand and operant resource in the service process. Customer involvement is optional and varies from none at all to extensive co-production activities. This recent research provides a lens or mind set to view co-production and co-creation value. The authors suggest the earlier Goods Dominant Logic view; based on a goods centred model of exchange value from an early economics and marketing understanding, was from a time when the focus was on efficiencies of production of tangible output.

Edvardsson and Olsson (1996) show a service development process consisting of the service concept, the service system and the service process. This conceptual frame links the Co-Production role to the competitive positioning of the service process. The control of the customer in the service process is a key competitive challenge. The service concept is further defined by Goldstein, Johnston et al. (2002) as the foundation upon which the components of the service delivery system are built. The components are the strategic intent, what services are provided, how they are delivered and the customers' expectations. Reviewing the service concept identifies how to change and improve, including a firm's market position relative to competitors and the type of customer relationship to pursue.

Edvardsson, Ng et al. (2011) study service design through a Service Dominant Logic lens to see if it outperforms from one designed with Goods Dominant Logic view. They use objective

and subjective criteria generally relating to the perceived service quality, customer experience or effectiveness of the service process.

*Given two service systems in the same domain and with similar functionality, the one informed by an SDL mind-set evokes a demonstrably better experience than the one informed by a GDL mind-set.*

They recognise this result is limited to user experiences and that the operational use of this insight in service design may warrant further study because the characteristics as design principles may need more practical insights.

Normann (2001) considers that how customers are viewed and suggests this is changing; no longer a receiver, no longer a source of business but now a co-producer, and a co-designer, bringing the capabilities of the customer as a value creator. Customer Co-Production is defined as containing customer participation, customer cooperation (communities) and value constellations. Value constellations replace the traditional value chains to recognise many actors are now involved in the value creating process for the customer. Co-Production means waking up and enabling sleeping, under-utilized resources, bringing competences together in time/space, linking actors in constellations.

Xue and Harker (2002) suggests customers participate in almost all stages of the service production and delivery process. In IT-enabled service this input is even more significant often requiring more sophisticated intellectual efforts. In these circumstances customer inputs are crucial for the efficiency and a high-quality service. Employee performance in service delivery is also a significant influence on a firm's productivity and service quality (Heskett, Sasser et al. 1997; Heskett, Jones et al. 2008). Xue and Harker (2002) define context specific definitions for *customer efficiency, transaction efficiency, value efficiency and quality efficiency*. These efficiency constructs are related to a firm's productivity, profitability and customer equity, examining these within service operations theory could operationalize these and provide insight on the service design implications.

### **Service design and process efficiency**

Chase (1978) in his seminal paper produced a service classification that could be used for service design. This related the degree of customer contact to the increasing freedom to design efficient service processes. In a further refinement of the classification (Chase 1981) proposed a relationship between process efficiency and the degree of customer contact, where contact was the physical presence of the customer in the service process. This work was based on the premise that the physical presence of the customer created a disturbance to the service process, reducing the efficiency.

Chase (2010) revisited where the customer fits in the service operation and examples of the effects of high customer presence on design decisions were illustrated for facility location, facility layout, product (service) design, process design, worker skills, quality control and capacity planning. Chase (2010) reviewed the original contact approach, which was based on systems theory, and suggested future development for the service classification. One area where development was needed was self-service, where it was possible to have high customer contact and high efficiency. With self-service new technologies enabled customers to be more efficient producers, benefiting themselves and the service organisation.

Frei (2006) showed that customers introduce tremendous variety into service operations. This research aligns with the earlier work by Chase (1978) and (Thomson 1967) where customers introduced disturbances that can impact service process efficiency. This is seen in manufacturing operations where input and process controls aim to eliminate variety to maintain process efficiency. With service, customers experience and satisfaction are determined by how much variety is accommodated. Customers are themselves a key input to the process; this form of input is capricious, emotional and disinterested in the company's profit or efficiency agenda. Input variation is categorised into arrival, request, customer capability, customer effort or motivation and special preference.

Lengnick-Hall (1996) suggested customer inputs must be carefully governed to prevent the increased costs. The design of the boundaries for customer inputs to ensure efficient and effective service processes is an important operations decision. The ability of a service firm to manage customers as a resource has implications for control of disturbances - recruitment, training and dismissal processes are not easily transferable to the customer worker. A further proposition was that efforts to enhance both customer resources and customer opportunities for co-production offer a way to achieve noteworthy gains in competitive quality. This concept is similar to the disturbance in the service classification (Chase 2010) and that dealing with this variety is a central challenge to a service business.

The central problem for service organizations is one of coping with uncertainty (Thomson 1967), this uncertainty can come from disturbances. Organizations cope with uncertainty by creating parts of the organization to deal with it, leaving other organization components to operate under conditions of certainty or near certainty. By concentrating technical and skilled resources (critical competence) within a technical core (Thomson 1967), a service system can be buffered from variety. Buffering does not handle all variations in an unsteady environment; organizations seek to smooth input and output transactions – leveling and forecasting demand. This approach is attempting to keep the technical core operating efficiency by sealing it off from customer variety where possible.

The theory of swift even flow and the service process matrix (Schmenner 1986; Schmenner and Swink 1998; Schmenner 2004) links increasing productivity to reduction of throughput time and variability. The service matrix relates the degree of variation (customisation for and interaction with customers) and relative throughput time (service transactions as compared to others in the industry) to types of service. Schmenner contends pursuit of a position to the left up the diagonal towards a service factory coincides with increased productivity. Often competitive pressures exert firms to move along the diagonal towards a service factory or professional services. The diagonal reflects the often polar pressure between efficiency and effectiveness. The research does not consider the customers role in producing the service and its impact on process efficiency although the level of customer interaction can relate to co-production activities.

The interaction and inputs of customers with service systems enabled by self-service is an interesting research area. The impact on productivity, efficiency and improvement are a concern for service operations designers and further empirical work is needed. An interesting research question that arises from the literature; **how does customer co-production, enabled by self-service, impact an organization's productivity?**

## **Methodology and case selection**

The case aim was to make a preliminary study of the phenomenon of co-production, process efficiency, productivity, service improvement and the service concept. The key research objectives for this question are:

- To understand how the self-service system was designed and operationalized.
- To examine the roles of customers and service employees, comparing and contrasting how these changed with self-service.
- To review the customer experience, service transactions and service concept.
- To review how self-service impacts service process efficiency and effectiveness.
- To measure the customer co-production impact on the organizations productivity.

To research customer co-production, self-service and process efficiency an exploratory case study approach (Sousa and Voss 2001; Voss, Tsikriktsis et al. 2002; Eisenhardt and Graebner 2007) was used to explore these phenomena. A case organization that had recently enabled co-production, after installing self-service process technology, was chosen. Semi-structured interviews with 25 customer service employees and managers were conducted at 12 service points. This initial case analysis reviewed both qualitative and quantitative data. The service transactions by customers using self-service were compared with the previous service employee led process.

## **Case organization context**

The case organisation chosen was a UK Public Library Service which initially wanted to provide customers with more choice on how issues and returns were transacted. With 3 million items per annum exchanged across a counter at the service facilities the process required a significant proportion of the service workers day for this activity. Radio Frequency Identification (RFID) self-service system was designed and implemented for issues, returns, renewals and payments. The self-service system was piloted at a new facility with facility design changes to support the new process. The service had a heterogeneous customer base ('cradle to grave') and all customers were expected to use and engage with the new self-service process for most routine transactions. During the early stages of implementation, austerity measures, budget reductions, and restructuring reduced service workers numbers significantly. There was an immediate need to improve efficiency and continue to deliver effective service to customers with reduced resources.

## **Initial results and analysis**

The interviews and analysis of secondary data generated several themes and observations.

### *Service concept*

The library's service concept and strategic intent are encompassed by the following statement made by a manager during interview questions about strategic direction:

*"Improve the quality of people's lives to help them to live better lives as citizens, to help them feel more informed, provide for self-discovery and learning, facilitating community groups, help children discover love of and passion for reading - the libraries purpose is to transform people's lives"*

The published customer charter defined the "what" component of the service concept

- A network of libraries which are accessible, well equipped and open at convenient times.
- A range of high quality stock and services to support literacy and learning, provide access to information and e-government, and give the opportunity for enjoyment and inspiration.
- 24 hour online access to information and e-government services as well as library reservations and renewals.
- Excellent customer service delivered by well-motivated, skilled and knowledgeable staff
- Consultation, evaluation, and promotion, with an aim to improve and develop in order to meet the diverse needs of individuals and the community.
- Access to a rich culture and heritage in order to foster a sense of place and community identity.

The customer expectations, target market and “how” component were not evident from secondary data although primary data at interview indicated service employees understood who the customers were and their needs. This data also indicated there were mature service processes that were being changed by self-service. The strategic intent and service concept appears to have been developed in an organic way.

*Service design and IT enabled self-service*

Self-service was initially about customer choice and modernization and became part of the service organically as the self-service kiosks were piloted and introduced.

*“strategically, it was around providing a better customer service and experience”*

It is not clear how self-service integrates with the service concept, the service experience, and target customers. Although the way it was implemented did ensure development and integration. Changing corporate objectives and revenue funding restrictions put an increased emphasis on using self-service to improve efficiency. The original process involved customer direct interaction at the service checkout, with delays, lines and opportunities to interact with service employees on both stages of the transaction – the issue and return of books. The introduction of self-service enabled the customer to complete a number of activities at self-service kiosks, rather than interact with the library service employees at the counter. It was possible for customers to use the service facility without any interaction with service employees.

Service design decisions appear to be emergent, strategic objectives for service operations were unclear at the commencement of the implementation of self-service. Multiple items scanning by the customer was a key operational efficiency decision taken. This seems to have been taken following trials of the scanners available. The introduction of self-service kiosks also included changes to layout and initially self-service was aimed at new and refurbished buildings. Subsequently, rebranding and refurbishment was linked to the introduction of self-service. The functionality, aesthetic features and user interface received significant design attention to ensure the usability and simplicity of the customer interface. The later introduction of customer cash and account management into the self-service machines was another significant decision to transfer work to the customer.

The ‘removal’ of the counter service alongside the introduction of self-service was a significant operational decision; this effectively reduces the opportunities for customers to choose how their transaction is completed, this also signaled a change in the role of the service employees. These design decisions and policy on customers’ use of self-service (minimal choice),

significantly improved the opportunities for process effectiveness and process efficiency improvement.

#### *Productivity*

There was an improvement in the overall efficiency of the library issue and return process; employees no longer were at counters handling books. Self-service removed approximately 70% of the service counter workload by transferring it to customers. The restructuring, service employee reductions (approx. 30%) and reduction in service opening hours improved the productivity, given that customer patronage/lending volumes are relatively stable and costs have reduced. Self-service has enabled one library to remain open and is now partly staffed by customers and volunteers. Managers recognize they could not have managed to the reduced budgets without self-service, in itself confirming that efficiency has improved.

*“it [self-service] was very much more about freeing-up staff than to enabling them to engage with customers and do other activities”*

#### *Service improvement*

Rebranding, layout changes and the removal of the traditional counter have provided operational improvement. The variety of requests that were not able to be completed by self-service have benefited from increased availability of service employees to support unusual requests and provide bespoke help. Self-service libraries are now wholly dependent on self-service for managing service operations; customers are now a crucial co-productive resource and the reliability of the self-service system essential for both the customer experience and library operations.

There has been a significant change in the role of service employees and an improved Servicescape/customer experience. The role changes for service operatives have been embraced in most cases and developed through coaching, workshops and management support. The support has generally been very successful although most staff expressed concerns about self-service - in most cases these have now been resolved. Roles appear to be more fulfilling, with less manual handling during transactions; more autonomy on individual decisions and on responses to customers, and there is more time for understanding customer needs.

#### *Customer experience*

Self-service changed the service experience; it reduced direct interactions at the counter. In some cases customer direct interaction improved away from the counter by proactive engagement of customers by service employees. Customers who needed to interact could now choose the time and location, often seeking assistance near the shelf of interest or the computer. Virtually all customers of self-service libraries now use the self-service system - well over 95% of transactions. It is clear that transaction time reduced largely as a result of multiple items scanning as opposed to single item manual scanning and stamping at the counter. Customers saw this version of self-service as an improvement over supermarkets and other self-service systems, largely due to multiple item scanning, simple user interfaces and the limited skill required to operate the touch screen kiosks.

Customers generally accepted and became competent on self-service over a period of 2- 6 months after introduction. It was necessary to learn how to use self-service and in some cases gain new skills and capabilities with the technology. Most customers were able to grasp self-

service quickly and were pleasantly surprised by the systems performance. Self-service introduced anonymity into the transaction and this was welcomed by customers and cited as a significant benefit to the overall experience.

Improvements to layout and service ambience and environment facilitated acceptance, learning and more use of enhanced services. Linking self-service with library refurbishment and modernizations was an important service experience design decision. There were no queues with self-service and the issue/return experience was less dependent on the availability of library staff.

It was necessary to train staff in new soft skills to make customer interactions effective. Community activities were continued and in some cases enhanced and consequently customers experienced improved activities and longer interaction times with service employees at the service points.

Through the careful management of the introduction of self-service, the service experience has been enhanced for most customers. There were a few examples of customers leaving the service because of a worsening of the customer experience from self-service. Overall self-service libraries have retained customers, made improvements to volumes of physical users (4% growth per annum bucking an overall downward trend) and online users have increased.

#### *Case analysis summary*

The initial analysis of the interviews and data confirms the introduction of self-service has been a success; accepted by customers, improved the efficiency of the library service and provided an opportunity for service enhancement. Self-service has benefited the library, its customers and service employees - resourcing reductions were enabled by self-service.

Service designs were emergent and organic, allowing for learning and change during the implementation to larger service points.

Customer reaction is largely positive and self-service usage levels are very high >95%, the customer support during implementation was good and the customer efficiency (lower throughput time for issues and returns than original counter process), a key selling point over retail self-service.

Customer Self-Service delivered mutually beneficial improvements to service for both customers and the library, this includes: queue busting, moving customers more quickly and efficiently, accurate data collection, variety reduction through the automatic process. Self-Service has allowed for the repurposing of employees, allowing library assistants to focus on more complex tasks that require personal attention or knowledge. This includes handling a greater variety of requests, dealing with differing customer capabilities and freeing staff time to provide added value services.

#### **Service Operations Management implications**

The implementation of self-service by using the customer as a resource to complete transaction activity would usually increase variety and reduce efficiency. The design of the self-service system with multi-item scanning and a simple customer interface has enabled efficiency to be improved. This result confirms Chase (2010) view that the customer contact model does indeed require development for self-service – the physical presence of the customer has not reduced efficiency.

Self-service has enabled the organization to improve process effectiveness and efficiency. This did require significant customer coaching, training and mandating the use of the self-service system - customer choice was restricted. Service design theory for customer co-production offers few guidelines on how to design for customer employees - designing for their inputs, capability, training, feedback and development.

Interestingly the freeing of service employees to handle an increased variety of request types provided time to deal with more unusual and difficult requests and enabled staff to deliver more personal and enhanced services. This opens up the service for further development, investment and growth.

### **Further research**

Further analysis of this case data is on-going, both qualitative and quantitative, to test further the initial results. The co-production impact on productivity, the customer experience and service concept are areas where relationships need further analysis. The multi-disciplinary nature of the phenomenon indicates a further review of existing literature would assist in exploring further the constructs and developing a conceptual model. A further case study on self-service and process efficiency is needed to see if the same impacts are observed in a commercial business. This case suggests the concepts of customer efficiency, service process efficiency and customer co-production require a service operations definition and further empirical study.

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