

# **An Exploratory Research Study: Operationalizing the Measurement of Failure Demand in Customer Service**

Robert Teehan  
Industrial Distribution  
School of Technology Studies  
robert.teehan@emich.edu

Walter Tucker  
Quality Management  
School of Engineering Technology  
walter.tucker@emich.edu

## **Abstract**

Category: Exploratory Research, Case Study

Purpose: The purpose of this research is to test a simple model designed to measure and improve service delivery in call centers. In many countries including the U.S.A., the service component of the economy has been dominant for over 50 years and continues to grow both in relative and absolute importance. Even so, there is a dearth of literature on strategies to improve services using simple interventions. Improvement in service delivery may be defined as increased customer satisfaction and/or reduced costs. Service delivery systems are highly idiosyncratic so change or improvement must be closely linked to each system's unique characteristics. There are many academic studies reporting effective and validated research methodologies employed to measure service quality from the point of view of the customer. However, these methods of measuring service quality are complex and unwieldy and best left to highly trained academics and graduate students for implementation and interpretation. Still, competition in the market drives service providers to seek ways to continuously improve. Customers expect and wish to receive value from the service center (value demand). Some literature (Seddon, 2005) suggests that service customers do not receive what they expect (failure demand) about half of the time. Service providers seeking a mechanism for continuously improving efficiencies while maintaining or increasing customer satisfaction may submit their systems to the rigors of academic research, develop expertise internally, or engage an external consultant. Our purpose is to adapt the lean service concepts of value demand and failure demand from the consulting world and apply them to actual call center service operations using academic rigor.

Methodology/approach. The authors developed a checklist of best practices for call centers from the literature. These checklists were discussed with call center staff and their managers and compared to their standard operating procedures and measurement/staff evaluation systems. All participants acknowledged that this was an experiment and the results could not be used for employee evaluation. Through multiple iterations with call

center staff and managers, the researchers developed a three part call evaluation system to include (1) value demand (2) failure demand and (3) not able to determine. This call evaluation system was used for several days. The ratio of the three categories was charted in a simple spreadsheet.

Findings: Managers of service operations are deeply interested in simultaneously improving efficiencies and customer satisfaction. Any validated tool to achieve these goals is highly valued. The findings indicated that the value/failure demand measurement system was useful and many failure demand occurrences occurred. Managers will consider improvements based on these data.

Research Limitations: This study describes a tiny sample of the service economy and is limited to direct service providers in call centers and their managers. This first step did not validate value from the point of view of the customer. This would be the next logical step for additional research.

Practical implications: Service providers need simple tools to assess operations, improve quality and efficiency. This was the first step in what we hope will be the development of an easy-to-use tool for the continuous improvement of services.

Keywords: service, quality, value, demand, failure, customer, lean

# **An Exploratory Research Study: Operationalizing the Measurement of Failure Demand in Customer Service**

Robert Teehan  
Industrial Distribution  
School of Technology Studies  
robert.teehan@emich.edu

Walter Tucker  
Quality Management  
School of Engineering Technology  
walter.tucker@emich.edu

Category: Exploratory Research, Case Study

Keywords: service, quality, value, demand, failure, customer, lean

The purpose of this research is to test a simple model designed to measure and improve service delivery in call centers. Improvement in service delivery may be defined as increased customer satisfaction and/or reduced costs. Service providers seeking a mechanism for continuously improving efficiencies while maintaining or increasing customer satisfaction may submit their systems to the rigors of academic research, develop expertise internally, or engage an external consultant. Our purpose is to adapt the lean service concepts of value demand and failure demand from the consulting world and apply them to actual call center service operations using academic rigor.

In many countries, including the United States, the service component of the economy has been dominant for over 50 years and continues to grow both in relative and absolute importance. Even so, there is a dearth of literature on strategies to improve services using simple interventions. Service delivery systems are highly idiosyncratic so that change or improvement must be closely linked to each system's unique characteristics.

One promising approach to improving service is the application of strategies adapted from the Toyota Production System (TPS) – lean production. The lean approach to service improvement is derived from the manufacturing production, so modifications of TPS are inevitable. While there are many ways to define “lean” practices, perhaps three elements appear in most definitions: (1) focus on value as defined by the customer (and value stream), (2) management of flow (including “pull” from customer demand), and (3) engagement of all in continuous improvement, (Womack 1990), (Womack & Jones 1996), (Hines, Holwef & Rich 2004), and (Mayalef 2006).

With such a definition in hand, what is the best method to apply what we know about lean practices in manufacturing and apply them to service activities? In the excellent

review of current lean thinking, (Hines et al. 2004) commented "... We have attempted to summarise how the lean concept has evolved from production toolkit, through single supplier-customer focus dyad, to a strategic value proposition. The resulting lean value system encompasses a value-adding network of operations across companies, with the goal of providing a series of contingent value proposition to individual final consumers. This focus on the final customer is still missing in most lean supply chains, and least of all it is found in the auto industry where lean originates. The optimization of such a networked system is determined by the value created to the customer, and not by localized performance measures within subsystems, such as the factory or the distribution channel. ... Further research is called for to see how this may be achieved in under-researched sectors, such as low-volume manufacturing and service environments... like health care, which are still in early stages of their lean evolution."

What is the advantage of a lean approach over one of the myriad academic systems of service improvement? These are well documented in (Swank 2003), (Johnston 2004) and (Johnston & Jones 2004), and of course the voluminous SERVQUAL literature (Parasuraman, Zeithaml & Berry 1985 and 1988). For more than twenty years, academics have been creating and refining excellent methods for measuring and improving systems of customer satisfaction and service excellence. There are, however, problems with academic approaches to researching service quality. It is now obvious that such problems do not lie in the reliability or validity of the instruments and interventions. Searching for SERVQUAL in the Emerald academic journal database alone returned 1191 "hits"; this is a well validated and widely used instrument. The problem with most academic approaches is one of scale. Developing and executing a full-blown SERVQUAL-based investigation requires a high level of staff and budgetary resources. These resource requirements and logistical barriers preclude the use of such approaches for many small and medium size enterprises.

It is widely accepted that in the most developed nations, small and medium size enterprises with a service orientation form the most promising source of economic growth. It follows that a simple form of assessing customer service could be very useful not only for the academic world but also for many potential clients in the private sector within the regions supporting public universities. This is particularly true for the authors of this paper working at a largely regional university in the Midwestern U.S. where our mission is one of service to the regional economy. The hegemony of the large automotive companies based in southeastern Michigan is broken and serious economic decline has ensued. The hope for economic stability in the future lies with small and medium sized enterprises, especially in the service sector. This study reports on research done in a call center of a company whose business model is based not only on manufacturing specialized products but also in providing service after sales.

How might service operations be improved without mounting long, expensive, and cumbersome projects using insights from lean production? Seddon (2005) uses the lean concept of working backwards or "outside in" to assess how a call center permits the customer to "pull" value from the system. This is highly consistent with the (Marr & Parry 2004) and (Parry 2004) study of Fujitsu call centers. Both Seddon and Marr &

Parry have determined that improving service quality is impeded by, “command and control” thinking – by using the management structure inherited from manufacturing and Frederick Taylor’s Scientific Management because that is what managers know and understand. Command and control work organizations work, “forward” from what managers think customers want. This approach is made rather simple by the data collected using modern call center technology. A call center manager can automatically create reports on length of time taken to answer call, percentage of calls abandoned by callers, average time call center operator stays with a customer, and so on. These are “push” measures which may not have any value in determining whether or not customers are satisfied. Feinberg, IK-Suk & Hokama (2000) lists measures which help to track call center quality. Only two of the thirteen listed measures relates to customer satisfaction. Conventional (non-lean) call center management appears to be tied to its ability to acquire data and manage its employees with this data, and not by satisfying customers. Furthermore, in their work on lean service services, (Bowen & Youngdahl 1998) comment that, “services tend to be innovation laggards”. So it should not be surprising that improvement efforts in call centers tend to be additional applications of command and control thinking.

The lean model starts with value as determined by the customer. Then, the organization’s flow of value should be defined by the degree to which the customer is satisfied. This is in stark contrast to a system, which “pushes” what managers believe customers want done without any contact or feedback from the customer. By applying these concepts to call centers, we determine that customers expect and wish to receive value from the service center and, the call center’s work should result in an alignment of resources such that the customer may readily pull value from the system. Satisfying service customers is defined as value demand by (Seddon 2005), or as creating value by (Marr & Parry 2004). Seddon (2005) suggests that service customers do not receive what they expect (failure demand) about half of the time. Parry (2004) and Marr & Parry (2004) report that in their study of Fujitsi call centers, “40-90% of incoming service requests were entirely preventable,” (no value created). Failure demand is not providing what the customer requires and as such, constitutes waste in the system.

By reducing waste (a lean principle) and creating a system capable of greater value demand while reducing failure demand, we should increase capacity. Failing to provide what the customer wants in a call center may lead managers to add more staff. We may bring in more operators to respond to customers who are not getting what they want. In contrast, by providing value (what the customers wants when they call) we should be able to increase productivity. By working backwards from customer requirements, we should be able to reduce waste. By working forward from management’s view of what customer want, we are likely to introduce waste.

Setting: Our research setting is a company (Company J) in the Midwest of the U.S.A. Company J designs, manufactures, and supports a range of products destined for the recreational vehicle market. While most sales are in North America, they also maintain a presence in Asia and Europe. Their products are installed by OEMs manufacturing recreational vehicles, trailers, trucks, and marine craft. These terrestrial and marine units

may then be repaired/serviced either by local service centers (not part of Company J) and/or by individual owners. Company J has two geographically separate call centers: one is for general information and available to the public, and the other is a technical center specifically organized to deal with inquiries from service center or OEM staff. The public call center receives about 110,000 calls per year experiencing a distinct increase starting with warm weather in the spring, and a decrease with the onset of winter. In the late 1990s, Company J initiated a lean production effort in their manufacturing sites. As a result of the familiarity with the benefits of lean, managers were very receptive to the authors' suggestion that lean thinking may be useful in the improvement of call center performance.

**Methodology:** This is an exploratory research project executed as a case study. After an initial meeting between the researchers and the call centers' manager, the manager provided the data generated by the system itself. As expected, this included: number and length of calls, time of calls, average time before call answered, abandoned calls, percentage of calls answered within X seconds, calls answered by operator, average time of call, etc. Also, the researchers were given data relating calls to specific products. The manager had a thorough understanding of her systems, their technological capabilities, and the people who work in them. The data provided was essentially "push" data, with no information relating to the resolution of customer concerns.

Attempting to work "outside" in, the researchers set up a meeting with the manager and the most experienced call center operator. Our goal was to measure the degree to which each call was resolved or value created. After some conversation to actually see the headquarters call center and understand the nature of their work, the researchers proposed the development of a process map to further our understanding of what happened when the phones rang. This method was consistent with our understanding of tacit knowledge in organizations and the link between tacit knowledge and the lean "outside-in" approach to understanding and improving organizations.

As indicated by Bellamy and Tucker (2006), and derived from (Nonaka and Takeuchi 1995), there are two identified types of knowledge in organizations: tacit knowledge and explicit knowledge. Tacit (from the Latin *tacitum*, meaning silent) knowledge is intuitive knowledge that may guide our actions successfully even though we are not fully aware of its source or effect. Explicit knowledge refers to knowledge that is easily identified and codified by the organization. However, "tacit knowledge is the force that enables explicit knowledge. It is therefore the critical source of information that organizations must find ways to enable in order to boost their competitive power," (Bellamy & Tucker 2006). Using Seddon's (2005) approach of "outside in" the researchers will focus on gathering and organizing data from the call center operators. Lean thinking is both built on and a reaction to Frederick Winslow Taylor's Scientific Management (Seddon 2005). Taylor believed that he could codify tacit knowledge and control it as explicit knowledge thereby dis-empowering the workers, the source of tacit knowledge. Taylor is reported to have said in 1906, "Any improvement which the workman makes upon the orders given him is fatal to success" (MacDuffie 1995). In contrast, understanding tacit knowledge means that information critical to the organization's success is located only with the

worker and may or may not be documented anywhere else. Taylor attempted to remove the knowledge from the worker and create work standards as the purview of management thereby alienating the worker. Our operating assumption is that the tacit knowledge will be willingly proffered if the worker is given the opportunity to engage in improvement activities which do not threaten their position.

Also, Hines et al. (2004) in their review of lean thinking, suggest that, “organisations ... miss the strategic aspect (value creation, and understanding customer value)” of lean while focusing on cost and lean tools. Thus, starting at the interface between the company and the call center customer should focus our efforts on value creation as determined by customers. By operationalizing the tacit knowledge found among the operators via the process map, we should be able to develop a mechanism for capturing data relevant to value and failure demand. The process map did illuminate the practices of the operators known (tacitly) to them and to their manager but his information had never actually been captured before. A process map was developed on the whiteboard in the call center itself and then photographed so it could be transferred to the computer and used for data collection.

The call center operators identified tiers of interaction starting with the incoming calls based on their tacit knowledge base. They defined the entry level to their system at the simplest level. They shared the fact that there were two distinct categories of calls coming into the call center: logged calls and not logged calls. This is a key component to the data collection and analysis for Company J. When presented to the manager the researchers were informed that the system of Company J allows the operator to determine if the call should be logged or not. This decision of allowing the operators to make a determination was made by Company J to allow the operators to best meet customer needs and not clog the reporting systems with calls that are perceived to be already resolved or, in our research term, considered to be value demand calls. These calls are seen to only require a simple exchange of information that is sought by the customer and thus meeting value demand in Company J's view. Thus, operators log calls based on the type of request from the customer. The not logged calls fit into customer requests for information such as location and contact information of the service centers, transfer calls to other internal numbers, technical center referrals and part numbers. In addition, there is a category identified as other, which contained various odd issues that were also not considered worthy of being logged.

Calls logged from Company J were contained within various product categories. These categories largely reflected customer service warranty issues, ordering of parts, various product faults, referrals, and callbacks required because the calls could not be resolved on the first call by the customer. These calls represent the larger function of having a call center according to Company J. The call center operators made no designation as to the status of the call being resolved or the identification and creation of value demand. Upon discussion with the manager all logged calls with the exception of callbacks, are considered resolved or, in our research term value demand. The process map showed additional evidence to management that unresolved calls may suggest that failure demand is occurring. Thus, it reflected that within both the referral and call back categories failure

demand is highly likely. The percentage of calls that fell into callbacks and referrals was 54% of the total calls logged and may be construed as failure demand versus value demand. This holds true to Seddon's suggestion that service customers do not receive what they expect (failure demand) about half of the time.

Another major finding was contained in the process map. The manager was very concerned about the areas and volume of the calls not logged and felt that this may be a systems error of the organization for reporting purposes. The not logged calls showed that they were approximately 3.73 times the volume of the calls being logged, thus the uncounted calls are the bulk of the interaction with customers. This reflects that the volume of work done by the call center was unaccounted for in Company J's management system. It also brings to light the question, are these calls a part of the 40% to 90% of incoming service requests that are entirely preventable that (Marr & Parry 2004) reported.

The process map and call center operators' tacit knowledge was responsible for providing a new visualization of what was happening in the customer service call center in Company J. The process map and the information gleaned from the process map has helped the manager to see the relationship between traditional call center management (activity tracking) and customer demand management (value and failure demand tracking). The manager has agreed with the researchers to continuing the study. We have created and established an agreement on a method for tracking failure and value demand using the terms resolved or unresolved in the reporting process by the call center operators. This method will be used on all the calls being logged by Company J.

The mapping process allowed Company J and the call center manager enough initial data to assist in their understanding of the various aspects that are required to measure value and failure demand. In addition, it allowed the manager to begin the conceptualization of creating a call center management system that reflects and compiles the aspect of customer demand. We can now specifically target the failure and value demand capability that was lacking in Company J. The biggest revelation to the manager and Company J was the significant amount of calls that were not being measured or accounted for in their approach in any form because they were not logged.

Further research is currently being conducted at Company J at both their technical and customer service centers that will show more clearly if they meet their customer's demands.

Practical implications: Service providers need simple tools to assess operations, improve quality, and efficiency. This was the first step in what we hope will be the development of an easy-to-use tool for the continuous improvement of services.



## Reference List

- Ahlstrom, P. 2004. 'Lean service operations: translating lean production to service operations', *International Journal of Services Technology*, 5(5-6), 545-564.
- Bellamy, A. & Tucker, W. 2006, 'Social psychological dimensions of quality: an exploratory analysis', *Ninth Quality Management and Organization Development Conference*, Liverpool, U.K.
- Bowen, D. & Youngdahl, W. 1998, "'Lean" service: in defense of a production-line approach, *International Journal of Service Industry Management*. V. 9, Issue 3, pp.207-225.
- Feinberg, R., IK-Suk, K. & Hokama, L. 2000 Operational determinants of caller satisfaction in the call center', *International Journal of Service Industry Management*. Vol. 11, No. 2, pp. 131-41.
- Hines, P., Holwef, M. & Rich, N. 2004, 'Learning to evolve: A review of contemporary lean thinking', *International Journal of Operations & Production Management*, Vol. 24 No. 10, pp. 994-1011.
- Johnston, R. 2004, 'Towards a better understanding of service excellence', *Managing Service Quality*, Volume 14, Number 2/3, pp. 129-133
- Johnston, R. and Jones, P. 2004, 'Service productivity: towards understanding the relationship between operational and customer productivity', *International Journal of Productivity and Performance Management*, Vol. 53, No. 3, .pp. 201-213.
- MacDuffie, J. 1995, 'Workers' roles in lean production: the implications for worker representation'. In *Lean Work*, ed. S. Babson .Wayne State University Press, Detroit.
- Maleyeff, J. 2006, 'Exploration of internal service systems using lean principles', *Management Decision*, Vol. 44, No. 5, pp. 674-689.
- Marr, B. & Parry, S. 2004, 'Performance management in call centers: lessons, pitfalls and achievements in Fujitsu services', *Measuring Business Excellence*, 8(40), 55-62.
- Nonaka, I. & Takeuchi, T. 1995, *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford University Press, New York.
- Parry, S. 2004, *Managing and Measuring for Value*. Research Report for Publication. Cranfield School of Management and Fujitsu, Bedfordshire, Great Britain.

- Parasuraman, A., Zeithaml, V., & Berry, L. 1985, 'A conceptual model for service quality and implementations for future research', *Journal of Marketing*, 49 Fall, pp.41-50.
- Parasuraman, A., Zeithaml, V., & Berry, L. 1988, 'SERVQUAL: a multiple item scale for measuring customer perceptions of service quality', *Journal of Retailing*, 64, Spring, pp. 12-40.
- Seddon, J. 2005, *Freedom from Command and Control*, Productivity Press, New York.
- Swank, C. 2003, 'The lean service machine', *Harvard Business Review*, October.
- Womack, J. and Jones, D. 1996, *Lean Thinking*, Simon & Schuster, New York, NY.
- Womack, J., Jones, D. and Roos, D. 1990, *The Machine That Changed the World*, HarperCollins. Publishers, New York, NY.