

Full Length Research Paper

Push-Pull interactive model of service innovation cycle - under the service encounter framework

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Prior exploration of the service encounter process placed the focus on personal interactions or the relationship with various factors in the immediate environment, without addressing the impact that the interaction between the service personnel and the customer has on development of service innovation activities. This study explores, in detail, the interaction between the point of service offering (service personnel) and the point of service request (customers), examines the push and pull roles each side takes on and the meaning of "service innovation" in this context. We employ the Critical Incident Technique in collecting qualitative data to illustrate how the formation of service innovation is a continuous and repeatedly escalating cycle. Through this repeating and renewing innovation process, service providers work towards the goal of excellent performance through the pursuit of continuous service innovation.

Key words: Service innovation cycle, service encounter, push-pull theory, critical incident technique.

INTRODUCTION

As the global economy steps into the era dominated by the service economy, knowledge-based and specialization-based trends are increasingly influential and the fundamentals of the service sector are experiencing immense changes. The type and scope of service-related activities are expanding, and as they become multi-faceted the challenges and competition facing the industry become increasingly fierce. In order to increase their competitive edge, service-sector companies must seek continuous change and innovation in service activity or operation model. Companies seek innovation in order to boost quality, increase market share and reduce costs and this trend is the same across manufacturing or service sectors (Sirilli and Evangelista, 1998). Nonetheless, the term "innovation" is indeed different in the context of development of intangible service activities versus the development of tangible activities (Nijssen et al., 2005).

Because of the differences in characteristics of service-

related versus traditional manufacturing activities, scholars often made distinctions between tangible manufacturing activities and intangible service activities when discussing them with regards to innovation. At the same time, because of the limitations of studying service-sector activities, most of the research on innovation has centered around the manufacturing industry and less on the intangible service industry (Meyer and DeTore, 2001) and this has indirectly contributed to academia's neglect of this specific research area (Easingwood, 1986; Griffin, 1997).

Past literature defined the term "service innovation" using differing viewpoints and discussion methods. Most of the research saw "service innovation" as product and process innovation (de Brentani, 1989; Easingwood, 1986; Miles, 1996; Damanpour, 1991); some also defined it as organizational and technological innovation (Kimberly and Evanisko, 1981; Gallouj and Weinstein, 1997; Miles, 1996; Normann, 1984, 1991; Sundbo, 1997; Aa and Elfring, 2002) and others even referred to it as a form of marketing innovation (Higgins, 1995). Yet, these descriptions that are based on manufacturing innovation provide only limited explanation and definition of innovation when it comes to the service sector (Wolfe,

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1994; Lundvall and Borras, 1998). The reasons being:

- 1) Service activities are, by their nature, intangible and variable and past research on innovation theories use innovation in manufacturing techniques as a basis;
- 2) The nature of service innovation is ambiguous, because production and consumption of service are closely linked and influence each other; it can be said that production and consumption of a service activity are practically occurring at the same time (Gallouj and Weinstein, 1997).

With this simultaneous interaction between providers and requestors, it is undoubtedly clear that the service provider and the customer become the necessary participants in the service delivery process. Both parties contribute to the successful completion of the delivery and "service" is often viewed as a process that involves a customer's participation in simultaneously producing and consuming it (Gronroos, 1982).

Thus, the process of service innovation is usually influenced by many more obscure and not easily recognizable factors than the innovation process of tangible production activities in traditional manufacturing industries. One of these factors is the concurrent participation of service providers and customers. Sundbo and Gallouj (1998) divided the motivations of service innovation into "internal" and "external" motivations, with service personnel taking on the role of internal motivation and the customer being the external motivation. They believed that service personnel were key internal motivators in the service innovation process because they are privy to the customers' true needs through a series of interactions with them and that they provide the most direct and valuable input to the company's innovation process. Customers, on the other hand, are the external motivations, because, through a "service encounter," they will provide feedback and opinions to the service personnel, thereby becoming an important source of information for the innovation process. Thus, any interactions and responses between personnel and customers in a service encounter often become the impetus for innovation in service activities. Based on this concept, this study uses face-to-face interactions (Shostack, 1984) and the resulting reciprocal feedback as a basis for discussing the development of service innovation and the reasons behind their occurrence.

THE SERVICE ENCOUNTER AND SERVICE INNOVATION

The term "service encounter" was first brought forth by Czepiel et al. (1985) and the research focus then was the interaction between the customer and the front-line service personnel. Generally speaking, service encounters can be defined as the experiences derived

from face-to-face interactions between consumers and service personnel within a defined period of time (Czepiel, Solomon and Surprenant, 1985; Shostack, 1985). Service encounters are not only the interactions with a service provider, but can also be the direct contact between customers and company representatives, or interactions between customers and an entire service delivery system, with the goal of enabling exchange and communication (Bitner, Booms and Tetreault, 1990; Guiry, 1992; Morgan and Chadha, 1993; Lockwood and Andrew, 1994; Bitner, Brown and Meuter, 2000) . Or they may represent a "snapshot" impression that a customer holds towards the overall quality of service (Zeithaml and Bitner, 2000). They can even represent the correct progression and existence of the service product and workflow within the instant of service consumption (Abramovici and Bancel-Charensol, 2004) . In that instant of service delivery and consumption, the content of the service is passed from the service personnel to the customer, that is, from the point of the service provider to the point of service request.

The system through which service is delivered is much like the supply chain within the manufacturing industry. The frontline service personnel's role is akin to the upstream resource supplier, providing a series of services to the customers downstream. There is a viewpoint that must be emphasized here and it is that the relationship between the service provider and the customer is closely linked (Gardrey, Gallouj and Lhuillery, 1992, 1993). Because of this, delivery of services within a system is not like a supply chain in the manufacturing industry where management only needs to measure transport of physical items and provider efficiencies to decide a delivery's value. Scholars like Day and Bodur (1978) and Quelch and Ash (1981) have pointed out that frontline service personnel interacting with customers is a main component that cannot be ignored when evaluating professionalism in service delivery. Within studies of the insurance industry, Crosby and Stephens (1987) attest to the interaction being a key indicator in evaluating a customers' overall satisfaction towards the service provider.

In other words, within the service delivery process, the factors driving the interaction need to be the main consideration when studying the formation of service innovation. The interactions and feedback from service encounters that lead to a new service method or model should be closely observed and dissected. Tax and Stuart (1997) suggested two ways to define new service activities: one way is based on the extent to which existing systems of service change and the other is based on the process of enacting the service activity and the resulting changes to its participants. Aiken and Hage (1971) even pointed out that implementation of an idea for the first time within an organization can be considered innovation. Both sets of definitions fit in with our concept of service innovation: it is essentially a series of interactions between participants, processes and physical

elements and it is also changes in format and newly implemented activities.

This study uses the service encounter as the basic framework and through close observations of interactions between service personnel and customers, focuses on analyzing the reasons and process by which service providers change service operations and revolutionize service delivery systems. Employing the Critical Incident Technique, on-site service personnel and customers are engaged in interviews using structured questionnaires, in an attempt to reveal and explore the key incidents within a service encounter that prompt providers to undertake innovative activities. The study also examines the role that internal service personnel and external customers play in the innovation activity. The main goals of the study can be summarized into the following:

1. To understand the interactive roles played by service personnel and customers within a service encounter that leads to service innovation.
2. To understand the interactive relationship between service personnel and customers within a service innovation activity and how the parties influence the development and direction of the innovation.
3. To dissect and analyze the development and model of service innovation within the service encounter process.

CRITICAL INCIDENT TECHNIQUE

Due to limited related research on service innovation, this study uses an exploratory method of study. The critical incident technique is a research method that categorizes qualitative data to provide quantitative results. Designed investigative procedures are employed to observe human behavior and then researchers categorize the recorded behavior into main types. Flanagan (1954) pointed out that the critical incident technique possesses two advantages:

- 1) The types of incidents obtained from the interviewees are hardly affected by the phrasing of the question and
- 2) The interviewees' answers are equally unaffected whether positive questions are posed first, or negative questions are posed first.

The critical incident technique is a convenient method whereby the researcher can easily categorize incidents for studying (Chell and Pittaway, 1998). Bitner, Boom and Tetreault (1990) defined an incident as an observable, relatively complete and independent activity from which a researcher could derive inferences or predictions about the person involved in the activity. A critical incident will, in an important way, either add to or detract from the value of the general goal of an activity. In other words, when studying service encounters, a critical incident is the designated exchange between a customer and the service personnel and in particular, is the exchange that results

results in new innovation activities. We hope to provide an accurate and consistent interpretation of the interviewees' reports without interfering with or altering the original recollection (Viney, 1983) and thus choose the Critical Incident Technique believing that it best fits our need for a qualitative exploration of service encounters and innovation.

DATA COLLECTION AND ANALYSIS

This study considered the different formats and intensity levels of service encounters (Bitner and Brown, 2000) and the differing levels of complexity within them (Lovelock, 1996). To more accurately reflect the formation process of service innovation from service encounters, the study chose service providers whose interaction model consists of "one-time encounters" and "a series of encounters within a period of time." Data was collected from 13 companies in four industries with similar service characteristics: 7 well-known restaurants in the food and beverage industry, 4 hotels, 2 airline companies and 3 travel agencies. Providers whose interaction model consists more of "similar and repetitive service encounters," like that of medical care providers, were not within the scope of this study given the special type of service they provide.

We employed the Critical Incident Technique (CIT) in our questionnaire-style investigation of the interaction between service personnel and customers within a service encounter and the reason and nature of the formation of new service activities. We designed two semi-structured questionnaires of the same format but with different content, each from the perspective of either the role of a service personnel or a customer within a service encounter, to uncover their actions in and influence on the service innovation process. Using convenience sampling at the entrance or exits of our chosen service provider locations, we interviewed and invited customers to fill out questionnaires and we also entered the service location to do the same to service personnel, in each instance using the appropriate version of the questionnaire. We utilized the definition of service innovation activity as derived by Tax and Stuart (1997), which states that any change in scope of service by a provider, service activity operations, or participants within a service encounter are all considered service innovation activities within this study. Given this, criteria for valid samples from service employees were:

- 1) The employee is very proud of the new proposed service activity and believes that it represents a previously unaccomplished or never before suggested feat within the organization,
- 2) The new service activity is one that is presented to a customer through a service encounter
- 3) The participant had to voluntarily describe the event that made the deepest impression in his or her memory.

Interviews with customers included the following questions:

1. Dear participant, can you please recount for me, from your memory, the most impressionable changes of service activity or service content in the period which you received service from this provider?

Note: A most impressionable service innovation includes changes in scope of service, service operations, or participants.

2. Please describe why you think they decided to implement this innovation in service.
3. Please briefly describe what happened at the time.

Similarly, we posed the following questions to service personnel:

1. Dear participant, can you please recount for me, from your

memory, the most impressionable innovation activity that has taken place in your time of employment here?

Note: An impressionable innovation activity includes changes in scope of service, service operations, or participants.

2. What do you think is the reason for implementing this innovation in service? Please elaborate.

3. Please briefly describe how you or the company went about implementing this service innovation.

After random contact with and surveying 250 customers (45.5% male, average age 34 years old) and 250 employees (57.8% male, average age 28 years old), 394 questionnaires were deemed valid and 106 invalid. Interviews with customers constituted 137 of the valid questionnaires and interviews with personnel equaled 257 of the valid questionnaires. The valid data was then given to three academic experts on the topic of service innovation for classification and the mutually agreed-upon subset consisted of 133 customer questionnaires and 253 personnel questionnaires. The customer and personnel data set was then divided up into 2 and 4 large categories, respectively and in applying Perreault and Leigh's (1989), calculation of the reliability index is thus:

$$Ir = \sqrt{\frac{(F_0 / N - 1 / N)}{(K / K - 1)}}$$

Ir = Reliability Index

F₀ = the number of pair wise interjudge agreements

N = total number of observations

K = the number of classification categories

We arrived at an index of 0.694 for the customer questionnaires and 0.857 for the personnel questionnaires, which implies good reliability for this tool which implies good reliability for this tool (compared with the original 137 and 257 number of valid questionnaires, the interjudge agreement level is 98 and 98.4%, respectively). In first-level classification, the identification of main reasons for the occurrence of the first service innovation activity comes from feedback from customers complaining about a lack in service, and the reasons fall into four main categories. They include: inadequate service delivery, defects in the service product, defects in the service facility and behavior of individual service employees. A secondary classification further breaks down these complaints, as shown in Table 1.

Data from the employee questionnaire was divided into four large categories in primary classification and nine secondary categories, with each secondary category representing a most memorable innovation activity in the mind of a service employee. The source of innovation was classified as belonging to the service process, the service product, the service facility, or pertaining to company processes. Innovations in a service process included revamping of the order tracking system, redesign of service delivery workflow and shortening of the service workflow. Innovations in service products include new product designs and new combinations of promotional and discount packages. These are represented in Table 2.

THE PULL THEORY OF INNOVATION AND DEMAND FOR CUSTOMER SATISFACTION

From the viewpoint of value delivery, a series of activities by a service provider has, as the ultimate measure of accomplishment, the goal of a customer's heart-felt satisfaction. Once customers receive service from an upstream provider, they "form" and "accumulate" satisfaction towards the service encounter and provide

this feedback to the provider, at the same time making a decision whether to interact with this provider again. This inevitably means that the upstream provider must service the downstream customer without incident in order to maintain a steady and long-lasting pact of cooperation. As pointed out by Goodwin and Ross (1992), any mistakes within the service delivery process during an encounter will induce a negative reaction from the customer, leading to dissatisfaction and complaints. After classification of the 137 customer and 257 personnel questionnaires, we discovered that 62.8% of customers believed that changes in service activities were directly due to their dissatisfaction with the services. Similarly, from the personnel questionnaires, we discovered that 66.51% of the reasons for the most memorable service innovation were customer complaints, per the employees' recollection. These results are in line with studies by Keegan and Turner (2002), who pointed out that a change in customer behavior, is often the influencing factor that causes companies to feel a pressure for survival and hence motivate them to continually pursue innovative activity.

Meyers and Marquis (1969) also pointed out that, under normal circumstances, nearly 70% of innovative activities are born out of customer demand. Thus the main driver for innovation is a concern for the customer, or, it can be said that its occurrence is basically to make up for a customer's complaint.

According to another portion (37.2%) of the customer questionnaire data, we also discovered that a customer's attitude can change at any moment, as reflected by the comments of one restaurant's customer: "We once enjoyed coming here because we liked its special service, but now, the uniqueness has worn off and if it does not provide new products, I think we would desire to come here less and less going forward." So besides mistakes in service causing customer dissatisfaction and hence a need for new services as previously described, a customer's consumption and habits might also change to the point where they would become uncomfortable with previous service methods (Bitner et al., 1990). Service providers, in order to accommodate these changes in the customer and market, would then develop a need for changes in their service model. For example, when customers consume the same service product repeatedly within a period of time, the freshness and appeal of the product would gradually wear off, causing customer satisfaction levels to go down. The previously provided service or delivery method no longer satisfies the customer and the demand for new services thus appears (Zithamli and Bitner, 2000). Service industry management theories emphasize the uniqueness of each individual customer (Normann, 1991; Eigler and Langeard, 1988; Sundbo, 1994a), so when consumers develop new needs based on changes in preference and become dissatisfied with previously provided service, service providers will attempt to find new interaction methods to satisfy them in order to win the promise of a

Table 1. Classification of data from customer interviews.

New service activity as described by customers	Number of occurrences	Rate of occurrence (%)	Cause of new service activity	
			Primary category	Secondary category
Provide more detailed product information	17	12.4	Inadequacy in service delivery	Delivered the wrong service product Slow service
Change service workflow	8	5.83		Content of the service did not meet expectations
Change service content	6	4.37	Inadequacy in the service product	Price considered too high
Provide promotions and discounts	11	8.02		Facility out of service or outdated
Update service facilities	4	2.91	Inadequacy in the service facility	Facilities did not meet expectations
Update store appearance	5	3.64		Felt uncomfortable towards the service style
Change service style	8	5.83		Bad or condescending personnel attitude
Change service personnel	16	11.67	Inadequacy in behavior of service personnel	Lack of skill in personnel
	11	8.02		
		62.8	Sub-total 1	
2) Market demand				
Introduce new products	25	18.24		Replacement product(s) appeared in the market
Introduce promotional product packages	19	13.86		Reduction in customer need
Issue VIP cards	7	5.1		Establish good relationships with customers
		37.2	Sub-total 2	

a long-term business relationship. The series of minute changes to the interaction between the service provider and a customer and the process of continuously creating new interactive relationships and means are, in essence, the innovation of service. This matches the definition of new service activity and service innovation provided by Tax and Stuart (1997). Yet, a customer's demand is ever-changing, thus service innovation by a provider must constantly evolve to match the customer's constant demand for satisfaction and the provider must go through a series of "search-and-learn" processes. This non-systematic search-and-learn process can be seen as a steady evolution of innovation (Sundbo, 1997). Service providers add to and substitute certain service characteristics or change the service style in an effort to raise the level of customer satisfaction and in extending the existing line of service in this way the process is considered incremental innovation (Abernathy and Utterback, 1978; Gallouj and Weinstein, 1997; Johnson et al., 2000).

This evolution of new interactive relationships brought on by customer complaints or customers' changing needs fits in with the "need-pull" innovation model discussed by Langrish and other researchers (Langrish et al., 1972), because it is motivated by customers from outside the organization. Once customers become dissatisfied

through mistakes in the service delivery process or changes in their own preferences, feedback is immediately presented to service personnel and this information motivates the service provider to start reflecting on and correcting the current service model.

One thing to note is that within the personnel questionnaire of this study, another 37.73% of the participants believed that innovation occurred because their employer chose to do so for business development and to keep customers happy. One travel agency employee stated the following in his questionnaire as the reason that their business innovates: "I know that if we do not develop a domestic travel package itinerary, our service product will lose to our competitors and we will quickly lose our advantage in the domestic travel sector."

Even though this type of innovation is not directly due to unsatisfactory feedback from customers, from another perspective it can be considered a "need-pull" form of innovation when service providers automatically develop a desire to expand business and maintain customer satisfaction by closely monitoring market conditions and changes in customer behavior. Service personnel often try out changing the scope of service or operation methods after observing their environment and changes in customer behavior, resulting in a new service interaction

Table 2. Classification of data from service personnel interviews.

New service activity as described by service personnel				
Primary category	Secondary category	Number of occurrences	Rate of occurrence (%)	Cause of new service activity
1) Innovation in service process	Revamp order creation and tracking system	20	7.78	Frequent mistakes in orders
	Redesign the service delivery workflow	28	10.89	Mistakes in order of steps when servicing
	Shorten the service workflow	46	17.89	Wait for service is too long
			36.56	
Subtotal 1				
2) Innovation in service product	New product design	41	15.95	Old services no longer had appeal
	Design new promotional and discount packages	29	11.28	Other service providers had better content
			27.23	
Subtotal 2				
3) Innovation in service facility	Re-decorate service facilities	17	6.61	Customer dissatisfaction towards the facility
Subtotal 3			6.61	
4) Organization innovation on an enterprise level	Design new compensation system	36	14	Customer dissatisfaction towards employee attitudes
	Introduce an employee mentoring program	27	10.5	Personnel's lack of skill
	Re-design structure of inputs for the product	13	0.39	Profit margins too low
			24.89	
Subtotal 4				

interaction model. Of course, during this time service personnel are going through a series of search- and-learn processes to discover the new form of service. Thus we can say that within the development of innovative service activities, the need-pull form of innovation is the main form among all service innovation.

THE PUSH THEORY OF INNOVATION AND INCREASING CUSTOMER SATISFACTION

Analysis of the data from the questionnaires in this study proved that the service innovation process is pulled along by the customers' demand for satisfaction, in a need-pull fashion. Through a search- and- learn process by the service personnel to discover new interaction models, the provider tries to make up for the sense of dissatisfaction

felt by the customer. In doing so the provider not only fulfills the customers' need to be satisfied with a service, but can also elevate a feeling of dissatisfaction that is felt towards a service to a level of satisfaction and increase the performance of the company. This elevation of customer satisfaction through innovative activities matches the explanation of enterprise innovation from the perspective of new product development or the spread of new technology impacting enterprise-wide performance, brought forth by Gold (1970), Utterback and Abernathy (1975), Von Hippel (1978) and others. This is what is referred to as the "technology-push" characteristic of innovation and stands in contrast with the "need-pull" concept. In past literature, however, the "technology-push" form of innovation primarily relies on push from technology and improvements in production techniques to increase enterprise performance, but as previously

mentioned, the nature of the service industry departs greatly from the manufacturing industry, thus some research have maintained that technology's role within service innovation is only minor. From verifiable research, it is evident that very few service providers have R&D departments and most of them employ the search-and-learn method to innovate.

In terms of actual results, the new operational methods developed by service personnel from search-and- learn processes not only provide new service content and features, they may also, at times, replace existing, inappropriate services. Purely from an operational perspective, these new methods play the same role as technology and are a series of discoveries, expansion and application, so the concept of "technology- push" can also be referred to as "discovery-push" (Munro and Norri, 1988). Thus, when service personnel improve inappropriate service activities to promote a rise in customer satisfaction levels, this is a motivator of service innovation. This study maintains that service innovation by providers stems from both the pull from customers who demand satisfactory service and the push from service personnel who attempts to improve service and raise customer satisfaction; both forces interact and are at work in the formation of innovation.

THE PUSH -PULL INTERACTION IN SERVICE INNOVATION WITHIN THE BASIS OF A SERVICE ENCOUNTER

Analysis of the data from the interviews uncovered that, in the process of a service encounter, development of service innovation was, in essence, the merger and interaction of the pulling force from the customer demanding satisfaction and the pushing force of the service personnel in improving their service model to drive up customer satisfaction. Figures 1 and 2 describe the relationship between the two sides.

In Figure 1, we use two dotted axes to depict the relative positions and movement directions of existing versus new service (from service providers) and states of satisfaction versus dissatisfaction (of customers). The axis running from the bottom left to the upper right corner represents the scope of service or the provider's mode of service operation; the state goes from existing service to new service and after a period of standardization of the new service, it will return to the existing service position as per the directions indicated by the arrows along its axis. In this way, the scope of service or operation format always bounces between these two states.

In the same way, the other axis which runs from the upper left to the bottom right corner represents the relative position and movement axis of the customer's attitude towards service received (as illustrated in Figure 2). At one endpoint of this service demand axis a customer is dissatisfied with the service and it eventually moves along the axis to a satisfied state and vice versa, reflecting the

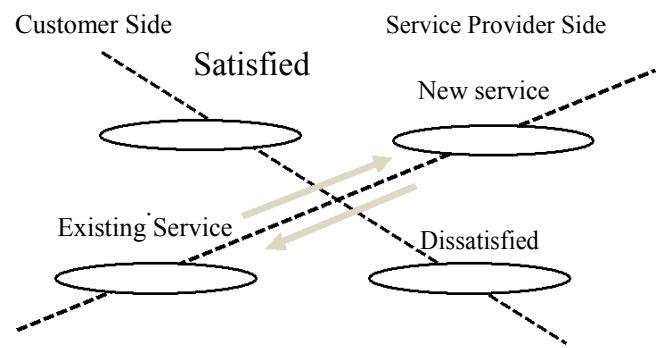


Figure 1. The state of existing versus new service from service provider side.

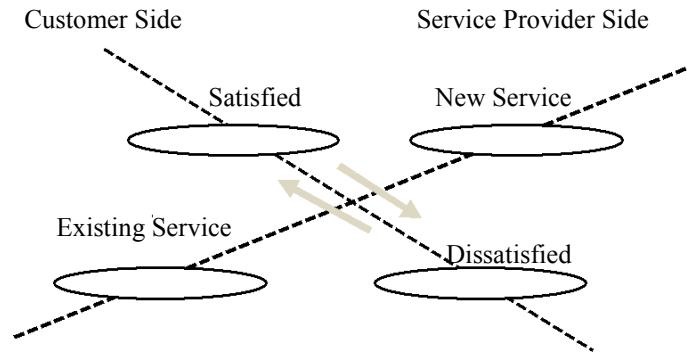


Figure 2. The state of satisfied versus dissatisfied from customer side.

customer's state of mind.

After analysis of the interactive scenarios between service personnel and customers from the interview data, we organized them according to the need-pull demand and the innovation-push forces into four scenario levels of service innovation formation. In the order of occurrence, they are:

- 1) Level of customer dissatisfaction rises, need-pull innovation occurs,
- 2) Discovery of a new service raises customer satisfaction,
- 3) Business development and maintenance of customer satisfaction pull for a shift towards new service knowledge and
- 4) Shift to new service and completion of the service innovation cycle.

Scenario one: Level of customer dissatisfaction rises, need-pull innovation occurs

During a service encounter, when a customer's own needs change or the service provided is inappropriate,

his or her level of dissatisfaction towards the service will rise (Bitner et al., 1990). As captured in Figure 3, a rise in the level of dissatisfaction is reflected in the vertical growth of the cylinder, with the dotted arrow indicating the direction. Once this occurs and negative feedback is presented to the provider, it creates a need-pull force (grey arrow) pulling the provider to focus on innovating its service. Service innovation activities include extending the scope of existing service, discovery of new service execution methods, improvements on service content, or even introduction of new service participants. To understand the consumer's dissatisfied state, the provider will start the research and development of new services. At this point we enter into the second scenario.

Scenario two: Service innovation raising customer satisfaction levels

At this step, to respond to the customer's wish to be satisfied, the service personnel will progress through a series of search-and-learn procedures to discover new models of service. Through this the older, existing service on the service provider axis will shift from its place in the lower left corner towards the condition of providing a new scope of service or operational method, ending up in the upper right corner of the Figure. This shift from older methods to new obviously also represents a rise in service levels or standards. Per Figure 4, when a provider's service content achieves a new standard, service innovation then resolves the problem of customer dissatisfaction and pushes that state of mind towards a satisfied condition. The grey arrow in Figure 4 represents this innovation push.

Scenario three: Business development and maintenance of customer satisfaction pull for a shift towards new service knowledge

When service personnel provide new methods of service, it has the effect of pushing the customer's dissatisfied state from the lower right corner to the upper left corner along the axis, where satisfaction levels are correspondingly higher. This is reflected in Figure 5. We can thus say that at this stage of the service encounter, the new service activity that was provided fulfilled the customer's need for satisfaction. But given the concept of a pursuit of excellent service, each service employee will wish to achieve even higher job performance, which may lead to an effective service model being spread through the organization via mutual learning among employees.

When new service content proves effective in raising customer satisfaction, it is capable of being rapidly spread within the organization. It can be said that at this point, the new service method is continuously circulating among service employees in the most efficient and concrete way (O'Dell and Grayon, 1998; Dixon, 2000).

Standardizing service methods and operations is the

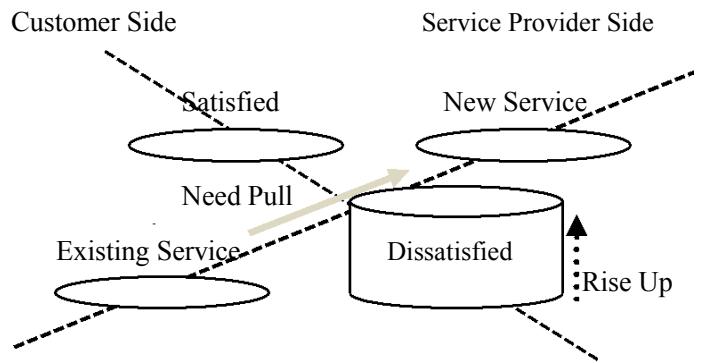


Figure 3. Level of customer dissatisfaction rises and pull new service innovated.

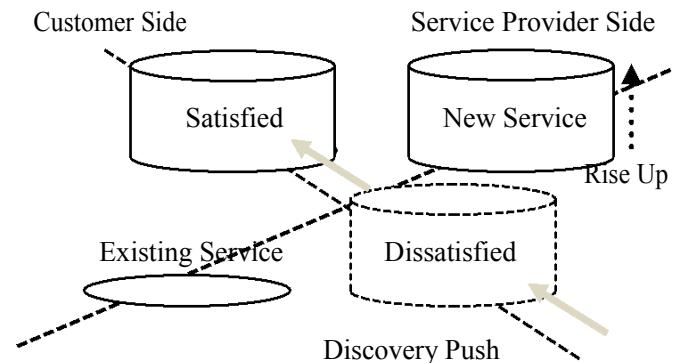


Figure 4. Level of customer dissatisfaction rises and pushes the state from dissatisfied to satisfied.

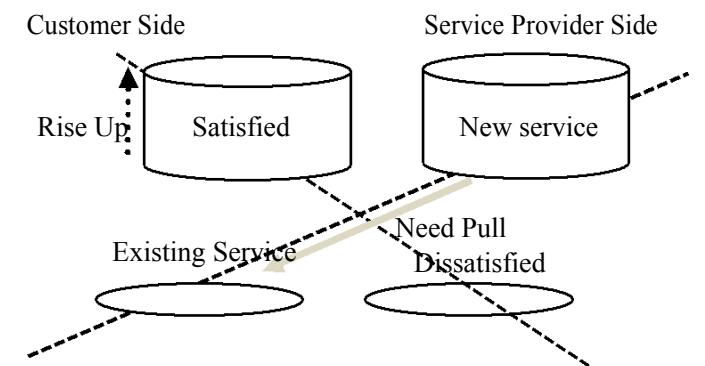


Figure 5. Level of customer satisfaction rises and pulls new service methods standardization.

best way to serve and maintain customer satisfaction. Given this, we see the service providers side developing a need-pull on business development and maintenance of customer satisfaction (via the grey arrow in Figure 5), to shift to a new scope of service or different operational methods.

Scenario four: Shift to new service and completion of the service innovation cycle

This is the last step in the development of service innovation within the context of a service encounter. To maintain high levels of customer satisfaction, service providers will start nurturing new service content and interactive relationships promote new knowledge exchange among personnel and establish new service standards in order to maintain good service quality (Figure 6).

The content of this new knowledge exchange and standardization may include different service elements directly or indirectly related to a service encounter. Once the new service model expands or is standardized on the service provider side, the service content provided will be of much higher quality than before. This step can be thought of as one that formalizes and solidifies the new service content in the development process of service innovation and it marks the end of this "cycle" of the four steps that we just described. In summary, once knowledge of new service content is transferred from employees and standardized, service personnel will deploy this new content and methods in new interactions with customers. When in this relationship customer satisfaction once again declines and negative feedback is received, it will form another need- pull situation, pulling the service provider to seek change in the existing scope of service or content, thereby starting a new innovation cycle. The circular dotted arrow in Figure 7 represents the track that service innovation follows and as long as service personnel and customers repeatedly interact, the circular cycles continue.

Conclusion and Discussion

In the past, most service providers had to conduct service encounters under limited budgets and in order to control costs, they often developed a standardized workflow to control the service system's operations and guide service personnel behavior. These circumstances often greatly limited the autonomy and decision-making freedom of personnel when servicing customers and indirectly created a lack of flexibility in the scope and content of the service that is provided. When in a service encounter, the service personnel, upon seeing the constant demand from customers for satisfaction, can engage in an ever-repeating process of service innovation themselves, they can revitalize the rigidity that is caused by standardization of workflow. Restore flexibility in existing service and one will be able to effectively raise customer satisfaction.

But the service industry is highly competitive, so even though new service ideas or innovation can be implemented in a short amount of time, it is prone to being copied by competitors at any time (Easingwood, 1986). Thus, without protection of a patent, service innovation that develops out of service encounters often does not hold any competitive advantage (Gadrev et al., 1993;

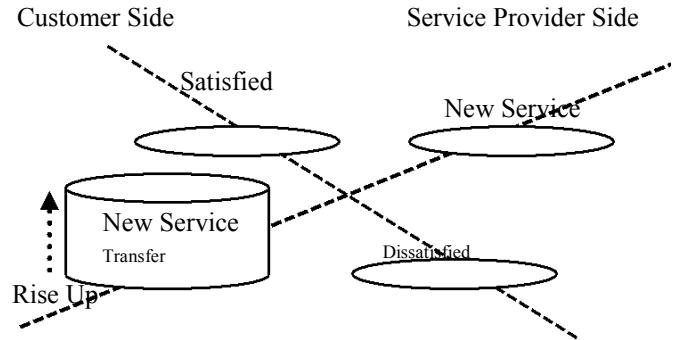


Figure 6. New service transfer and the accomplishment of service innovation.

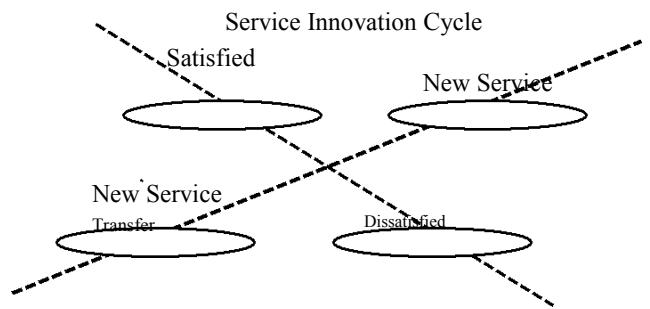


Figure 7. The cycle of service innovation.

1994). Oke (2004) maintained that the biggest obstacle to innovation that service providers face is the lack of an effective and comprehensive process for its development. Nonetheless, providers must efficiently maintain innovative activities in order to raise the bar against their competitors and possess an advantage. Only through non-stop repetition of the innovation cycle will they achieve the goal of continuous service innovation.

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REFERENCES

- Aa W, Elfring T (2002). Realizing innovation in services. *Scand. J. Manage.*, 18:155-171 .
- Abernathy WJ, Utterback JM (1978). Patterns of Industry Innovation. *Technol. Rev.*, 80(7) June, 2-29
- Abramovici M, Bancel C (2004). "How to Take Customers into consideration in Service Innovation Project". *Serv. Indust. J.* 24 (1): 56-78.
- Aiken M, Hage J (1971). Organization and innovation. *Sociology*, 5:63-

- Bitner MJ (1990). "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses" *J. Markt.* , 54 (4): 69-82.
- Bitner M J, Booms BG, Tetreault M S (1990).*The Service Encounter: Diagnosing Favorable and Unfavorable Incidents*. *J. Markt.* , 54: 71-84.
- Bitner M J, Brown S W, Meuter M L (2000), "Technology Infusion in Service Encounters", *J. Academy Markt. Sci.* 28(1): 38-149.
- Crosby L A, Stephens N (1987),"Effects of Relationship marketing on Satisfaction, Retention, and Prices in the Life Insurance Industry," *J. Markt. Res.*, 24(11): 404-411.
- Czepiel J, Solomon M, Surprenant C (1985)."The service encounter". Lexington.
- Chell E, Pittaway L (1998). A study of entrepreneurship in the restaurant and café industry: Exploratory work using the critical incident technique as a methodology. *Inter. J. Hospitality Manage.*, Vol. 17, pp. 23-32.
- Damanpour F (1991). "Organizational innovation: A meta-analysis of effects of determinants and moderators". *Academy Manage. J.*, 34 (3): 555-590.
- Day RL, Bodur M (1978). Consumer responses to dissatisfaction with services and intangibles. *Adv. Consum. Res.*, 3, 263-268.
- de Brentani U (1989).Success and failure in new industrial service. *J. Production Innovation Manage.* 6(4): 239-258
- Dixon NM (2000). Common knowledge: how companies thrive by sharing what they know. Boston, Mass.: Harvard Business School Press.
- Easingwood C J (1986).New product development for service companies. *J. Prod. Innovation Manage.* 3 (4): 264-275
- Eiglier P, Langeard E (1998)."Servuvation". Paris.
- Flanagan J C (1954). The critical incident technique. *Psychol. Bull.*, 51(4): 327-355.
- Gallouj F, Weinstein O (1997). Innovation in service. *Research Policy*, 26: 537-556.
- Gardrey J, Gallouj F, Lhuillary S, Ribault T, Weinstein (1993)."La recherché-développement et l'innovation dans les activités de service: le cas du conseil. De l'assurance et des services d'information électronique", report for the Ministry of Higher Education and Res., Dec.
- Gardrey J, Gallouj F (1994). Innovation dan's l'assurance: le cas de l'UAP, research report for UAP, University of Lille I and IFRESI, Sep.
- Goodwin C, Ross I (1992). Consumer Responses to Service Failures : Influence of Procedural and Interactional Fairness Perception. *J. Bus. Res.*, 25: 149 -163.
- Griffin A (1997). PDMA research on new product development practices: updating trends and benchmarking best practices. *J. Product Innovation Managt.* , 14: 429 - 458.
- Gronroos C (1982). Strategic Management and Marketing in Service Sector. Marketing Science Institute, Christian, MA.
- Guiry M (1992), "Consumer and Employee Roles in Service Encounters", *Advances in Consumer Research*, 19: 666-672.
- Higgins J M (1995). Innovation: the core competence. *Plann. Rev.*, 23: 32-36.
- Johnson SP, Menor LJ (2000). A critical evaluation of the new service development process. *New Serv. Dev. J.* Fitzsimmons and M. Fitzsimmons. Thousand Oaks, CA, Sage: 1-32.
- Kimberly JR, Evanisko MJ (1981). "Organizational innovation: the influence of individual, organizational, and contextual factors on hospital adoption of technology and administrative innovations". *Academy Manage. J.*, 24 (3): 689-713.
- Keegan A, Turner JR (2002). The management of innovation in project based firms, Long Range Planning, Vol. 35, pp. 367-388.
- Lundvall BÅ, Borrás S (1998). *The Globalizing Learning Economy: Implications for Innovation Policy* Brussels: Commission of the EU. 170 p.
- Langrish J M, Gibbons W G, Evans FR, Jevons (1972)."Wealth from Knowledge: A Study of Innovation in Industry", New York: J. Wiley.
- Lockwood, Andrew (1994). Using Service Incidents to Identify Quality Improvement Points," *Int. J. Contemp. Hospitality Manage.* 6 (1, 2): 75-80
- Lovelock CH (1996). *Service Marketing*, 3rd ed., Prentice Hall, International Editions
- Meyers S, Marquis DG (1969).Successful Industrial Innovation, National Science Foundation: Washington, DC
- Meyer MH, DeTore A (2001). Perspective: Creating a platform-based approach for developing new service. *J. Prod. Innovation Manage.* 18(3): 188-204
- Miles I (1996). Innovation in services: Services in innovation. Manchester: Manchester Statistical Society.
- Morgan RL, Chadha S (1993). "Relationship Marketing at the Service Encounter", *Serv. Ind. J.* 13(1): 112-125.
- Normann R (1984). Service management, strategy and leadership in service businesses. Chichester: Wiley.
- Normann R (1991). Service management, strategy and leadership in service businesses. Chichester: Wiley.
- Nijssen E, Hillebrand B, Vermeulen P (2005). Unraveling willingness to cannibalize: A closer look at the barrier to radical innovation. *Technovation*. 25 (12): 1400-1409
- O'Dell C, Grayson J. (1998). If only we knew what we know: Identification and transfer of internal best practices. *California Manage. Rev.*, 40(3), 154-175.
- Oke A (2004). Barriers to innovation management in service companies, *J. Change Manage.*, 4(1), 31-44
- Quelch JA, Ash SB (1981). "Consumer satisfaction with professional services", in Donnelly, J.A. and George, W.R. (Eds), *Marketing of Services* American Marketing Association, Chicago, IL, pp. 82-5.
- Shostack G L (1984). Designing services that deliver. *Harvard Bus. Rev.* 62(1): 133-139.
- Shostack GL (1985). Planning the service encounter. In: Czepiel, JA, Solomon, MR, Suprenant, JF (Eds.), *The Service Encounter: Managing Employee/Customer Interaction in Service Business*. Lexington Books, MA.
- Sirilli G, Evangelista R (1998).Technological innovation in service and manufacturing: Result from Italian surveys. *Res Policy* 27(9): 881-889.
- Sundbo J (1994a), Modulization of Service Production, Scandinavian J. Managt., 10 (3): 245-66
- Sundbo J (1997). Management of Innovations in Services. *The Service Industries J.*, 17 (3): 432-455.
- Sundbo J (1998). *The Organization of Innovations in Services*. Fredriksberg: Roskilde University Press.
- Sundbo J (1997). Management of Innovations in Services, *The Service Industries J.*, 17 (3): 432-455.
- Tax SS, Stuart I (1997). "Designing and implementing new services: the challenges of integrating service systems," Theory to management practice: towards an integrated approach. *J. Retailing*. 73(1):105-134.
- Utterback J M, Abernathy W J (1975). "A dynamic model of process and product innovation", *Omega*: 639-656
- Viney L (1983). "Assessment of psychological states through content analysis of verbal communications". *Psychological Bull.* 94: 542-563.
- Von Hippel E (1978). Successful industrial products from customers' ideas, presentation of a new customer-active paradigm with evidence and implications. *J. Mark.* 42(1), 39-49
- Wolfe RA (1994).Organizational innovation: Review, critique and suggested research directions. *J. Manage. Stud.* , 405-432.
- Zeithaml VA, Bitner MJ (2000). *Service Marketing: Integrating customer focus across the firm*, 2nd edition. Irwin McGraw-Hill, London.