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**Keywords**
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**Disciplines**
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# Realigning Service Operations Strategy at DHL Express

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This paper describes the approach that DHL used to respond to aggressive revenue and profit targets set by its Asia-Pacific regional management board. DHL's reaction to these targets was to redefine its strategic service vision by systematically aligning its internal support functions with distinct buyer behavior structures. Specifically, we developed a model based on the tangible and intangible factors that directly influence a customer's choice of a third-party logistics provider. Next, we reverse engineered the service provider's delivery system to align with each customer's preferred buying behavior. DHL's share of wallet and profitability immediately improved, enabling the company to maintain its leading position in the market. Quantitative and qualitative results show an improvement in DHL's market share, customer satisfaction scores, and employee opinion survey results.

*Key words:* third-party logistics; service concept; survey research; discrete choice modeling; latent class segmentation.

*History*: This paper has been refereed.

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**I**mproved trading conditions within the Asia-Pacific region prompted DHL's regional management board to embark on an aggressive strategy to achieve substantial revenue and profit targets in its 2015 strategic plan. The management board recognized that country-level managers would need to make hard-line decisions about (1) "who" should be the right customers in DHL's target market, (2) "what" product bundles would be contracted or promised to customers via the service concept, and (3) "how" the service components would be executed throughout the service delivery system. These three concepts represent the basics for any service operations strategy (Heskett et al. 1987, Goldstein et al. 2002, Roth and Menor 2003). A high level of strategic fit, congruence, or alignment between all three concepts usually leads to greater customer satisfaction and desirable performance.

Historically, DHL has pursued practical ways to provide the right product bundle to the right customers at the right price. The company must continuously align product, customer, and price to permit its day-to-day survival; however, the primary focus of most alignment activity is tilted toward tangible product features when positive local feedback from customers is readily available. These features include greater choice of air or ground services, reliability of overnight or second-day delivery, and door-to-door pickup and delivery. DHL devoted less attention to finding the most optimal service response based on specific customer expectations, needs, and corresponding buying behavior primarily because identifying customer needs and preferences was difficult to achieve in practice.

DHL Express (Taiwan) recognized an opportunity to quickly differentiate itself in the marketplace by redefining the alignment concept based on the customer's expressed buying behavior, instead of on the standard product bundle. This approach to alignment and the subsequent systematization of service encounter support—

especially the customer operations and key account functions—has its challenges; in some sense, it has turned the DHL business model on its head.

Accurately identifying the service attributes that customers value during their third-party logistics (3PL) buying experience is the greatest challenge to redefining the alignment of the service concept. The 3PL industry presents several challenges to alignment. The key service components (e.g., transportation and warehousing) are inherently complex because they involve physical movement of goods, information technology (IT) systems support, and contact with service personnel; however, a 3PL provider must be able to bundle a broad range of services for customers who have distinctly different needs.

To address this complexity, we use quantitative discrete-choice methods and qualitative interviews to model buyer behavior structures. These methods are core to the approach we describe in this paper. In the following sections, we (1) position the problem setting for our study, (2) describe and explain the methods we used to redefine the service concept, and (3) present the benefits that resulted from our work.

## Country Overview and Problem Setting

DHL Express is the world's premier international logistics and express service provider; its global network comprises more than 220 countries and territories. The company provides parcel and express shipments to international destinations by road, rail, and air. For the last 30 years, DHL has enjoyed clear market leadership in the Asia-Pacific region. Expectations in this region remain high for continued onshore and offshore market growth based on strong gross domestic product (GDP) figures and improved trading conditions for foreign-owned companies.

The specific focus of this study is on the Asia-Pacific region; however, for ease of illustration, we provide specific examples using the Taiwanese division of DHL

Express. Taiwan is a relatively small island covering 35,980 square kilometers; it has a population of 22.7 million and its GDP per capita of $16,913 (USD) is close to the average GDP for all Asia-Pacific countries, $16,389 (USD). The major business sectors in Taiwan are high technology, specifically the original design and manufacture of components and equipment for the audiovisual and technology, automotive, apparel, and the textile industry. These demographic characteristics make Taiwan representative of the entire Asia-Pacific region.

In the late 1980s and 1990s, competition in the Asia-Pacific region evolved from niche businesses, primarily Asian-based logistics service providers, to multinational logistics service companies, such as Federal Express (FedEx), TNT, and United Parcel Service (UPS). As competition increased and the market matured, customer buying behavior changed, becoming far more demanding in terms of price and quality. This was particularly noticeable with the onset of globalization, as communications improved and information became more visible within enterprise supply chains.

As a result, DHL's core products and services, including Document Express and Worldwide Parcel Express, moved toward becoming commodities. A greater number of suppliers were now capable of providing the service quality and physical transit times that customers require.

Changing buyer behavior and the threat of commoditization has created a considerable service operations management challenge for DHL. Its key problem is its ability to optimally align its service operations strategy with the requirements of different customers. Furthermore, the Taiwanese management team must adopt a model that complements and enhances other change programs and initiatives already underway in the country and in the Asia-Pacific region.

## Service Operations Management Literature

Service operations management is generally concerned with providing practical insight to enable firms to effectively deploy their operations. Outstanding service firms have a clear internal strategic service vision based on (1) targeted market and customer segments, (2) the notion of a service concept as a complex product bundle (or offering to customers), and (3) the design of their service delivery systems. These components represent the basic values on which a firm is built (Heskett 1986, 1987) and the level of integration or alignment. When these customer-focused components are well-integrated or aligned, they have a positive impact on profitability (Heskett et al. 1994, Roth and Menor 2003). Figure 1 illustrates the logic underlying this work. Put simply, when organizations focus their attention on the customer market, the service concept, and the delivery system, they create value during the service encounter that can drive customer satisfaction with the product or service and enhance the purchasing experience. In turn, increased customer satisfaction enhances customer loyalty and firm profitability.

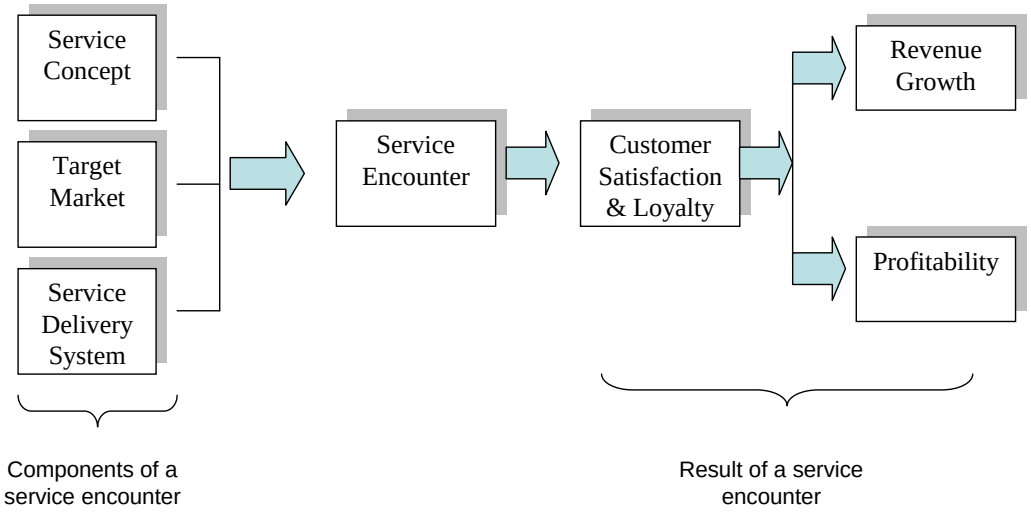


**Figure 1: The flowchart gives an overview of the strategic service encounter.**

**(*Sources*: Heskett 1986, Heskett et al. 1994, Roth and Menor 2003)**.

While these conceptual relationships are among the most popular ways to illustrate the link between customer-focused behavior and profitability, they have not been well validated empirically. Moreover, the literature is silent about the sequence that managers should follow when implementing a strategic service vision. In this paper, we redefine customer alignment and describe the sequence of activities and techniques required to establish a strategic service vision within DHL. In our approach, the strategic service vision begins with the development of a service concept model. Next, we use the service concept model to reverse engineer a market segmentation model and then to redesign the service system design.

## How We Redefined the Service Concept Model Based on Buyer Behavior

The service concept was originally defined as the "total bundle of goods and services sold to the customer and the relative importance of each component to the customer" (Sasser et al. 1978, p. 14). In other words, it reflects the way an organization would like its services to be perceived by customers (Heskett 1986).

A key point of differentiation for DHL Taiwan was to redefine its approach to the service concept based on the relative importance of various core and peripheral service components. This required us to model customer preferences more directly based on a two-step approach: (1) Use of discrete choice preference analysis across an Asia-Pacific sample and (2) in-depth qualitative interviews with Taiwanese customers.

*Step 1*. Discrete choice analysis.

The first step was to generate a snapshot of the service components most valued by Asia-Pacific customers when choosing among logistics service providers. To do this, we used a technique known as discrete choice analysis (DCA). The advantage of

DCA over alternative techniques, such as conjoint analysis (Wind et al. 1989), is that it allows conceptualization of choice as a process of decision rules based on theories of human behavior (Adamowicz et al. 2008). When selecting any product, service, or combination of both, a decision maker will consciously or unconsciously compare alternatives and make a choice that involves trade-offs between the components of the alternatives. The result of this process is a choice outcome that can be statistically tested using the multinominal logit model to accurately gauge the behavior of decision makers when presented with alternative solutions (Louviere et al. 2000). Research has demonstrated that choice predictions resulting from DCA-based experiments are generally very accurate representations of reality (Louviere et al. 2000).

In this paper, the steps we followed to identify the behavioral logic underpinning a customer's preference structure are (1) identification of a small number of key attributes; (2) specification of levels of the attribute; (3) creation of the experimental design; (4) presentation of alternatives to respondents; and (5) estimation of the choice model. Verma et al. (2002) provide an extensive review of guidelines for designing and conducting DCA studies in a services context.

We sent an e-mail to a sample of DHL's Asia-Pacific customers, inviting each to participate in the choice model survey. Of these 998 companies, 309 completed the survey—a final response rate of 31 percent. Approximately one-third of the responding firms were from Australia and New Zealand, one-third were from China, and the remaining firms were located in Hong Kong, India, Japan, South Korea, Singapore, and Taiwan. The distribution by industry type is skewed toward the largest users of 3PL services, such as manufacturing, wholesale/retail, and transport/storage firms. The median firm size was approximately 3,200 employees; the smallest firm had 16 employees and the largest had 400,000 employees. One salient characteristic

of the data is that although all the respondents are DHL customers, they typically deal with more than one global logistics provider (79 percent of the firms use multiple 3PL providers). Thus, although all the firms use DHL, their use of other 3PL providers reduces the extent to which selection bias is a problem in the sample.

To identify representative levels of each attribute, we also conducted an extensive pretesting procedure, comprising several rounds of qualitative work to ensure realism. This work included reviewing academic literature, industry reports, and websites. We also conducted interviews at 37 customer firms within seven Asia-Pacific countries to ensure that our definitions accurately reflect the conceptual domain of each attribute, thereby facilitating content and face validity. We used these interviews as the basis for the final selection of the levels of each attribute.

An inspection of the scores across the levels of each attribute (Table 1) indicates that *reliable performance* is the single attribute with the greatest influence on customer choice. As the levels of reliability increase from a low of 89–91 percent to a high of 98–100 percent, a statistically significant linear increase exists. *Price* is important as a determinant in choice. However, our study results reveal a surprising lack of statistical significance at the "0–4 percent more than now" level. This indicates that some customers might not be price sensitive.

The results for *customer interaction* indicate a positive and statistically significant relationship to being "easy to deal with" that is independent of whether rewards are provided. *Supply chain capacity* equates with being able to meet unanticipated customer needs. The results show a clear preference for providers who are industry leaders and a strong dislike for providers who fall below the industry average.

Traditionally, the industry has adopted a reactive approach to *customer service recovery*—a situation in which a customer with concerns about delivery assumes

responsibility for contacting the 3PL supplier. Online track and trace capabilities are examples of sophisticated ways to automate this process. Alternatively, providers can be proactive and take responsibility for notifying the customer of likely delays. For example, DHL recently established quality control centers that allow its staff to identify parcels that are up to 15 minutes late and proactively contact customers to advise them of the reason for the delay.

*Supply chain innovation* is defined as the provision of new services and is generally considered to be very important across all product and service categories. Being an "industry leader" is important relative to innovation; "poor innovation" counts against a provider. *Professionalism* addresses knowledge of the service provider. It effectively combines two slightly different areas of knowledge—the first relates to the logistics industry and the second relates to the customer's business. Our results indicate that this is not generally an important characteristic; however, customers prefer providers with deep industry and customer business knowledge—as one would expect.

| | Beta | Relative main effects |
|---|---|---|
| *Reliable performance* | | |
| 98–100% of the time | 0.452*** | 0.324 |
| 95–97% of the time | 0.331*** | |
| 92–94% of the time | −0.319*** | |
| 89–91% of the time | −0.465*** | |
| *Price* | | |
| 0–4% less than now | 0.154*** | 0.176 |

| | | |
|---|---|---|
| Equivalent to now | 0.193*** | |
| 0–4% more than now | −0.044 | |
| 5–8% more than now | −0.304*** | |
| *Customer interaction* | | |
| Easy to deal with, frequently rewards | 0.177*** | 0.132 |
| Easy to deal with, rarely rewards | 0.147*** | |
| Difficult to deal with, frequently rewards | −0.198*** | |
| Difficult to deal with, rarely rewards | −0.126*** | |
| *Customer service recovery* | | |
| Very proactive: an industry leader | 0.169*** | 0.160 |
| Better than industry average response | 0.130** | |
| Equal to industry average response | −0.017 | |
| Slow & unlikely to propose solutions | −0.282*** | |
| *Supply chain capacity* | | |
| Excellent: industry leader | 0.082* | 0.076 |
| Better than industry average | 0.066 | |
| Equal to industry average | −0.013 | |
| Below industry average | −0.135*** | |
| *Supply chain innovation* | | |
| Very innovative: an industry leader | 0.081* | 0.096 |
| Better than industry average | 0.066 | |
| Equal to industry average | 0.044 | |
| Poor innovation, no solutions | −0.191*** | |
| *Professionalism* | | |

| | | |
|---|---|---|
| Deep logistics and customer knowledge | 0.057* | 0.037 |
| Deep logistics, acceptable customer knowledge | −0.003 | |
| Acceptable logistics, deep customer knowledge | −0.047 | |
| Acceptable logistics and customer knowledge | −0.007 | |

*p < 0.05, **p < 0.01, ***p < 0.001.

**Table 1: The data in the table show aggregate results from our multinomial logit analysis.**

Overall, our findings are consistent with our expectations, providing confidence that the model provides an accurate representation of the characteristics that customers value.

*Step 2.* DHL Taiwan customer interviews.

During a two-month period, the most seasoned and mature DHL commercial representatives in Taiwan conducted in-depth interviews with DHL's top 260 Taiwanese customers by sales channel; these interviews further validated the efficacy of the service concept model. They also provided the representatives with an opportunity to show their understanding of the customer, to explain their perceived views of the business, and to comment on overall working conditions.

The underlying logic used to code the semistructured interview questions was based on a behavioral method developed by Gattorna (2006). This framework identifies four behavioral types or "logic sets" that capture the dominant tensions in all human interactions. These types are coded as producer (P), administrator (A), developer (D), and integrator (I). The latter framework links the four behavioral types to the activities valued by customers (Figure 2).

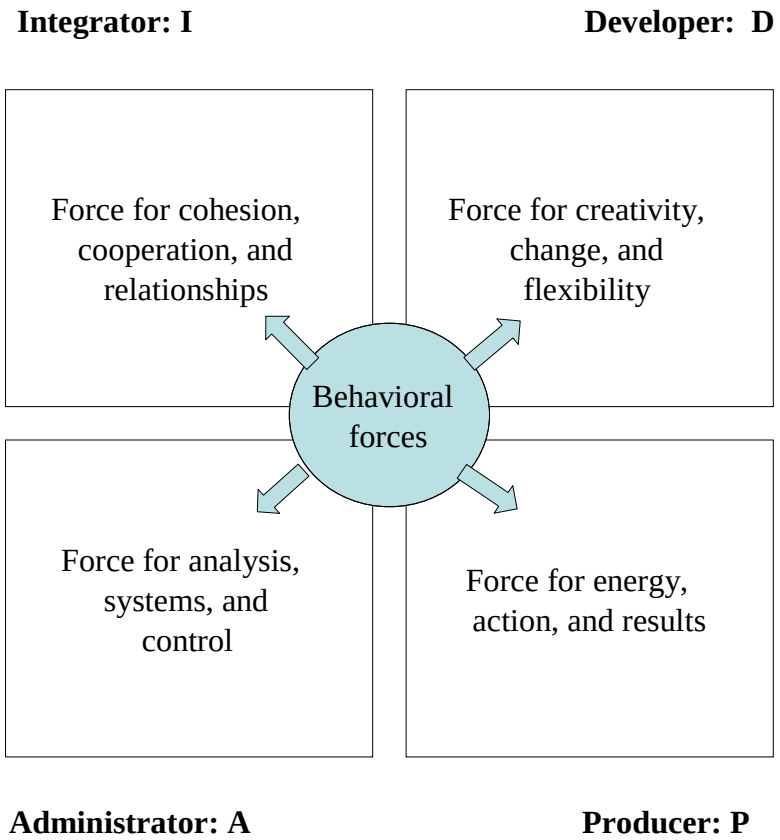


**Figure 2: The quadrants represent the general characteristics of the four dominant behavioral forces or logics.**

***(Source:* Gattorna 2006).**

The P-A-D-I coding system provided a natural segmentation of customer buying behavior based on the customer's specific center of gravity. The results indicate that 25 percent of customers fall between the integrator and developer quadrants and 50 percent fall between the administrator and producer quadrants. The remaining 25 percent of customers fall between the integrator–administrator and developer–producer quadrants. The natural trade-off between the four behavioral forces is complementary to the work we describe in Step 1. Importantly, both approaches allow classification of customers into common segments that can be used to inform the design of the service delivery system.

**Target Market Segments**

An understanding of the target market is fundamental to service operations and accepted wisdom recognizes that there may be advantages to segmenting markets and offering different service packages to different segments. In a B2B context, segmenting customers can be difficult and prior efforts to integrate customer requirements into operations strategies have not demonstrated significant business value (Dibb and Wensley 2002).

The traditional approach to segmentation among researchers and practitioners is to segment on the basis of demographic characteristics, such as location, age, income, and revenue. In service operations management, practitioners tend to segment customers based on operational attributes (e.g., degree of customer contact, degree of customization). In the case of DHL Asia-Pacific, the segmentation strategy is based on the customer operating platform (i.e., global, regional, local) and the revenue potential (i.e., customers are identified as large, medium, or small). All corresponding responses within the company, such as customer contact and service customization, are aligned with this segmentation approach.

The problem with this approach is that it assumes a "one-size-fits-all" mentality for each revenue segment. DHL allocates similar resources (e.g., degree of account management and operational support) to each segment regardless of actual customer preferences, buyer behavior, or opportunities for potential increases in revenue. In other words, its segmentation approach does not discriminate by individual preferences; by implication, it cannot guarantee that responses will be properly aligned.

We recognized that if we could combine an analytical approach to mapping potential revenue and with a rigorous segmentation model of buyer behavior, a more

accurate picture was likely to emerge. We could then prioritize resources and align them with greater confidence.

We conducted latent class segmentation analysis to provide statistical rigor when accounting for customer heterogeneity in buyer behavior. Latent class techniques are particularly useful for estimating the likelihood that a specific firm fits into a class of firms for which a particular model applies. More specifically, by using latent class modeling, we are able to derive a maximum likelihood-based statistical model that accounts simultaneously for both the similarities and differences between decision makers based on their actual preference for different service characteristics. The advantages of this approach are well documented; it provides a more elegant interpretation of the cluster or segment criterion that is less arbitrary and statistically more appropriate; Wedel and Kamakura (2000) provide a general explanation.

We applied a three-step process to select the best segment solution: (1) identify the model with the best information criterion-based fit; (2) examine the classification statistics for the preferred model to ensure that the model has an acceptably low ratio of classification errors; and (3) plot the estimates for each segment in the preferred model against one another to ensure that the segment solution is not an artifact of scale-factor differences that would result in a systematic tendency to respond to questionnaire items on a basis other than what the specific items were designed to measure.

An examination of the fit statistics, classification statistics, and estimates for each segment revealed that a three-segment solution is the preferred model. Figure 3 shows the relative main effects for each segment. In a simple, visual way, it highlights the variation between segments based on the order of magnitude of difference for each attribute. Segment 3 is highest on the broader value-based attributes such as customer

interaction, customer service recovery, and supply chain innovation; it aligns most closely with the integrator–developer coding metric we describe above. Segment 2 is driven most noticeably by reliable performance; its score is more than twice as high as the nearest alternative group. It aligns most closely with the integrator–administrator coding metric. Segment 1 is clearly dominated by price and supply chain capacity, which aligns most closely with the administrator–producer coding metric. The fourth segment identified from the interviews (developer–producer) was not identified in Figure 3. This implies that the number of customers with this preference combination were insufficient to influence the latent class calculations. One of the most interesting aspects of these models is that they show how the segments differ both in terms of what does and does not matter to respondents. This point was critical in developing our service delivery system.

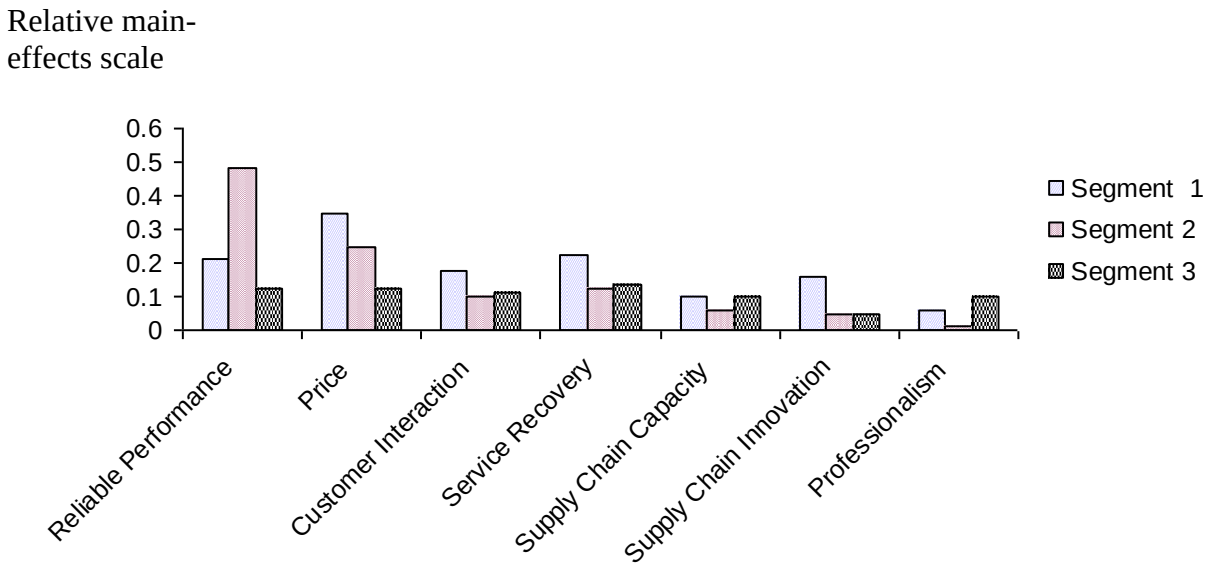


**Figure 3: The graph illustrates the relative importance of attributes across segments (i.e., main effects).**

Having determined that a three-segment model provides the best statistical solution, we then turned our attention to describing each segment. The interview work conducted in Taiwan was particularly valuable here because it enabled us to quickly label dominant buyer behavior as (1) collaborator, (2) perfectionist, or (3) price zealot.

**Developing the Service Delivery Systems**

To execute the new strategy, DHL Taiwan recognized the need for a service delivery system that aligned with buyer behavior as defined in the service concept. To achieve this, we developed a capability architecture that included various structural capabilities, including business processes and technology, equipment, and network configurations for delivering the new customer-focused service concept. We had to make choices regarding the type of value-added service, the location and frequency of customer contact points, the reallocation of service tasks, and the number and type of

distribution channels (e.g., service desks, customer visits, and dedicated key account personnel).

Surprisingly, we realized that we had to do little to the core product offerings to align them with the new service delivery system. Rather, the buyer behavior-focused service concept allowed us to systematize the customer value we offered with our core products.

We identified 22 changes to business processes within the existing business operations; over the next six months, cross-functional teams undertook process reengineering to correct this situation. Examples include establishing key account desks, e-solutions, and pre-export clearance handling. Table 2 describes all product and service solutions that we developed.

| Segment 1<br>Collaborators | Segment 2<br>Perfectionists | Segment 3<br>Price zealots |
|---|---|---|
| **Products & services required**<br>Core product, BBX, onboard couriers, next-flight-out and charter options, shippers' interest insurance, global mail, logistic inventory management, time and day definite services. | **Products & services required**<br>Core product, global mail, time and day definite services. | **Products & services required**<br>On-site mailroom staff, customization of billing / operation / it solutions, key account desk (dedicated customer service), project management of customer solution. |
| **Value-added services**<br>Shippers interest insurance, sale in transit, neutral delivery service, delivery duty paid, shipment consolidation, special deliveries and pickups, free storage for three days, e-com tools, e-billing, key account desk. | **Value-added services**<br>E-solutions, delivery duty paid, neutral delivery services, drop shipment, break bulk express, cross docking, one-stop clearance, key account desk. | **Value-added services**<br>Domestic service, mailroom service, program management of solution implementation. |
| **Current DHL practices**<br>Insurance, trade services, pre-export clearance | **Current DHL practices**<br>Regular pickup service, data exchange process, late | **Current DHL practices**<br>IT solutions & EDI for billing, regular pickup and |

| | | |
|---|---|---|
| shipment handling, regular pickup service, late pickups, early deliveries, coordination with 3rd parties for on board couriers, next-flight-out & charter needs. | pickups, early deliveries, on-site support, e-com tool, e-billing, special billing, re-weight report, daily shipment e-reports. | delivery, track and trace / regular activity reporting, same-day uplift. |

**Table 2: We developed product and service systems based on the three segments we defined.**

As details of our work emerged and familiarity with the output intensified, the management team's most significant realization was the need to segment our customer service and care to align with the dominant buying behaviors identified (per the behavioral metric system we described above). Consequently, the team worked to create a segmented service delivery system aimed at improving customer alignment at no additional cost.

Segment 1 comprises customers who prefer a collaborative approach. Key account desks were established for these customers because they expect DHL Express to understand their business and are willing to pay a premium for this level of service. Segment 2 comprises customers driven primarily by reliable delivery. Because our survey data indicate that this segment rewards firms that are industry leaders in a number of categories, customer service executives were assigned to manage the accounts and ensure that responsive solutions were forthcoming. Segment 3 is driven primarily by price-conscious customers who require a consistent level of service. The

traditional DHL Express customer service model based on customer agents was used to ensure that service was based on the lowest cost of service.

Specifically, there is clear alignment between the customer service and cost-of-sales functions within DHL Taiwan and the three dominant buying behaviors. Customer tariffs are now aligned with customer buying behavior, incorporating trading and potential volumes and transactions. DHL Taiwan is now able to differentiate itself from its competitors at the point of sale, in account management, and in responsiveness. When grounded on a well-defined buyer behavior model, a more systematic service delivery system can be established that is both commercially viable and entirely manageable.

**Consequences of Applying Service Operations Alignment**

The results of this new approach were remarkable. DHL Taiwan reduced its customer service costs by nearly 14 percent and markedly improved its customer retention rate, which is one of its key sales performance indicators. Volume of trade for each customer by product, trade lane, and geography is also a key performance indicator. DHL Taiwan's customer retention rates for Segment 1 (collaborators) improved by 12.9 percent; in addition, it has not lost any customers in this segment since August 2007. In Segment 2 (perfectionists), retention rates improved by 15.65 percent; no customers in this segment have been lost since August 2007. Segment 3 (price zealots) improved by 8.74 percent; in the year starting August 2007, DHL Taiwan only lost 3.5 percent of its trading customers. These results show that improved collaboration and responsiveness have significantly improved retention within the most profitable customer segments (1 and 2).

Every two years, DHL's parent group, the Deutsche Post Group, conducts customer satisfaction surveys across all channels of DHL Express. DHL Express

Taiwan achieved first place in the Asia-Pacific group in the "Mystery Shopper Survey"—an independent survey measuring professionalism and ability to manage an array of customer inquiries. Additionally, we ran our own smaller survey of the segments we identified in this research. The results indicated that customer satisfaction scores increased by 15 percent among customers in Segments 1 and 2 customers, and 12 percent among customers in Segment 3.

## Alignment Insights and Key Lessons

Alignment is a frequently used but poorly understood concept. In this paper, we describe the sequence of steps that DHL used to align its service operations. The greatest challenge to implementing an aligned service operations strategy is to develop a method that accurately captures the trade-offs that customers make when choosing a 3PL service provider. We highlight the efficacy of two complementary approaches that can be used to identify the customer's underlying behavioral logic. Once identified, the next step is to classify customers into meaningful segments and then reverse engineer the service delivery system to meet the specific needs of each segment. This is the essence of dynamic customer alignment; it captures customer heterogeneity within the marketplace and (or) the decision-making unit inside the firm (Gattorna 2006).

Of equal importance is the need to be realistic in setting targets and goals in undertaking this transformation. It took 14 months of analysis, reengineering, beta testing, and customer involvement to achieve an operating model that DHL could deploy fully across its organization of 1,100+ people. Once deployed, continual evaluation was required to evolve and adapt to the impact of such changes on the organization.

In managing organizational change, leadership must be fully on board and behind the initiative. When problems arise, finding fault and reverting to old behaviors is easy. The critical part now for DHL Taiwan is ensuring that this change becomes part of the organization's culture, ever evolving and ever adapting to the marketplace. Effective alignment of the service operations concept must be dynamic and constantly evolving with the customer's buying behavior. This is the long-term service-design challenge at DHL!

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