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# Customer Satisfaction over Industries, Countries and Time<sup>1</sup>

by

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## **Abstract**

The study uses a dynamic theory of market behavior and the concept of market matching to predict systematic differences in satisfaction over industries, countries and time. These predictions are tested using a database created from three broad-based national satisfaction surveys in Sweden, Germany and the United States. The results reveal that, across countries, satisfaction is highest for competitive products, lower for competitive services and retailers, and lower still for government and public agencies. Yet the pattern and significance of results varies uniquely by country. The results also support predictably lower levels of satisfaction in Sweden and Germany compared to the US and systematic changes in satisfaction in Sweden over time. Overall the study supports the use of national indices for making meaningful comparisons of satisfaction on a broad scale.

## **1. Introduction**

With the emergence of national satisfaction indices, macro-level measures of customer satisfaction are more widely available than ever before (Johnson et al., 2000). These indices have been shown to reveal systematic differences in satisfaction across different types of industries within particular countries (Fornell et al., 1996). However, it remains unclear just how systematic these differences are across countries and over time. Satisfaction measures have been criticized as inherently problematic when making such broad-based comparisons. If customers adapt to good or poor levels of product or service quality within an industry or entire country, then no meaningful differences should emerge. Another limitation of existing research is that the arguments made to support broad-based differences in satisfaction have been relatively general in nature. The

arguments have not specified the mechanisms or processes that drive observed differences in satisfaction on a national or international level.

A primary goal of this research is to examine whether industry differences observed in earlier studies generalize across countries and over time. If so, the findings would support the use of subjective measures of well being to make comparisons on a broad scale. Another goal is to develop a more formal basis for predicting and interpreting macro-level differences in satisfaction than currently exists. We draw upon a dynamic theory of competition and market behavior (Dickson, 1992; Hunt and Morgan, 1995; Reekie and Savitt, 1988) and Alderson's (1957, 1965) notion of market matching to enrich our understanding of satisfaction differences.

The paper uses a unique database created from three established national satisfaction surveys in Sweden (the Swedish Customer Satisfaction Barometer or SCSB; Fornell, 1992), Germany (the Deutsche Kundenbarometer or DK; Meyer, 1994, 1996), and the United States (the American Customer Satisfaction Index or ACSI; Fornell et al., 1996) to test our hypotheses. Our results support the general pattern of results reported in previous studies. However, we find systematic differences in this pattern from country to country. Overall the results have important implications for managers and policy makers who use satisfaction measures to evaluate the competitiveness of firms, industries, and entire countries.

## **2. Broad-based comparisons of satisfaction**

Customer satisfaction research has, until recently, focused on a customer's satisfaction with product episodes or service encounters. More recent research has developed around satisfaction as a customer's overall experience to date with a product

or service provider, or cumulative satisfaction (Johnson, Anderson and Fornell, 1995).

The advantage of taking a cumulative view of the satisfaction construct is that it provides a more direct and comprehensive measure of a customer's consumption utility. This is consistent with treatments of customer satisfaction in both economic psychology (Johnson and Fornell, 1991; Poiesz and von Grumbkow, 1988; Wärneryd, 1988) and welfare economics (Simon, 1974), where satisfaction is equivalent to consumption utility.

The main implication is that, compared to more transaction-specific satisfaction, cumulative satisfaction is more an overall evaluation of the consumption experience. As a more theoretical or latent variable, cumulative satisfaction is difficult to measure with any one survey measure or scale. Rather, it should be measured as a weighted-average of multiple satisfaction indicators. The issue of measurement error may then be addressed through the quality and number of proxies or indicators used to tap the satisfaction construct (Johnson and Fornell, 1991). Following these arguments, the SCSB (Fornell, 1992) the ACSI (Fornell et al., 1996), the NCSB (Norwegian Customer Satisfaction Barometer; Johnson et al., 2000) and the ECSI (European Customer Satisfaction Index; Eklöf, 2000) are all built upon a cumulative definition of satisfaction and operationalized as indices.

Although the national indices have greatly facilitated our ability to compare customer satisfaction across industries, there are notable broad-based comparisons that predate their development. Andreasen and Best (1977), using American consumers, compared customer satisfaction and complaint behavior across thirty-five categories and found greater satisfaction with products than with services. Wikström (1983) subsequently replicated these results using surveys of both Swedish and American

consumers. She also found satisfaction to be lower on average in Sweden, a result she explains based on general differences in competition and market performance between the two countries.

More recent research replicates and extends these earlier studies. Consistent with Andreasen and Best (1977) and Wikström (1983), Fornell et al. (1996) use data from the ACSI to show how satisfaction is systematically higher for competitive product industries than for competitive services and retailers. They further show that satisfaction is higher for both products and services than for public and government agencies. In the baseline ACSI survey, competitive products, competitive services and retailers, and public and government agencies showed average satisfaction index scores of 80, 75 and 64 respectively (on the 0-100 ACSI scale).

## **2.1 The adaptation problem**

In spite of results showing systematic differences in satisfaction across industries and even countries, arguments against broad-based comparisons remain prominent. Ölander (1977a, 1977b, 1988) argues that aggregate measures of customer satisfaction are inherently problematic and will not reveal meaningful differences. Ölander points out that customers may use different yardsticks to judge satisfaction, differ in their knowledge base, adapt to given performance levels, fail to express true dissatisfaction, or strategically express false dissatisfaction. Elster and Roemer (1991) argue that the most import of these is the adaptation problem, also called the “happy slave” or “sour grapes” problem (see also Kahneman and Varey, 1991). Because customers adapt to the levels of product and service performance available to them, relatively few systematic differences

in aggregate satisfaction should emerge. Individual differences in the degree of adaptation within and across industries should further compound the problem.

Adaptation is a very real phenomenon. At some level, Ölander's concerns should affect the comparability of aggregate satisfaction measures. It may be difficult, for example, to compare satisfaction between customers in relatively wealthy and impoverished countries. At the same time, several considerations suggest that the concerns expressed over comparing subjective measures of customer satisfaction are overstated. Foremost is the fact that customer satisfaction evaluations do not occur in a vacuum. People evaluate and compare their experience and treatment in one product or service category with that in other categories. In contrast, the adaptation phenomena typically studied in psychology occur in relatively isolated contexts where available stimuli are highly controlled. Moreover, customers live in an increasingly global and information rich economy in which they are increasingly aware of alternative products and services available in the marketplace. As Pfaff (1977) argues, who is in the best position to evaluate customer satisfaction but customers themselves?

Ultimately, the counter argument to adaptation is straightforward. If observed differences in satisfaction can be explained by underlying differences among industries, countries, and time periods themselves, the differences are arguably systematic and meaningful (Fornell and Johnson, 1993). The key is to find a theoretical basis for expecting differences in satisfaction that can be empirically tested and supported.

## **2.2 General Predictions**

A limitation of existing studies reporting macro-level differences in satisfaction is that the arguments used to make predictions are themselves quite general. The arguments

focus on the prevailing levels of motivation and ability that firms, industries, and countries have to provide customers with a differentiated set of alternatives (Anderson, 1994; Fornell and Johnson, 1993; Fornell et al., 1996). With respect to ability, products are argued to have higher levels of satisfaction than services because it is easier for product-oriented firms to provide customers with a predictably different set of alternatives. This is attributed primarily to the co-production process that describes pure services. Because services are co-produced with the customer and involve more of the human resources of the firm, predictably different quality levels should be inherently more difficult to achieve (Edvardsson, 1996; Grönroos, 1990). Thus satisfaction should be higher for products. With respect to motivation, the more limited the competition the less incentive an industry has to meet different market segment needs. Putting these arguments together, and consistent with the observed empirical results to date, satisfaction should be highest for competitive products, lower for competitive services and retailers, and lower still for government and public agencies that represent service firms with limited competition.

Yet the mechanisms and processes that drive these differences in satisfaction have not received much attention. This makes it difficult to reconcile counter-arguments or examples where particular industries fail to follow the general pattern of results. Take the arguments surrounding service production. The co-production that distinguishes service production from product production has been viewed as having a negative effect on satisfaction (Fornell and Johnson, 1993). It adds variability to the production process, which makes it inherently difficult to differentiate a service offering.



At the same time, service production offers potential advantages over product production. The co-produced nature of a service allows for intensely personal and customized services that suit a very heterogeneous set of needs (Anderson, Fornell and Rust, 1997; Grönroos, 1990; Hoffman and Bateson, 1997). Effective service firms (and customers) find ways to take advantage of the inherently more flexible nature of service production to more than compensate for the problems of delivering consistent and predictable levels of service quality. “Producers of goods typically manufacture the good in an environment that is isolated from the customer. As such, mass-produced goods do not meet individual customer needs. Since both the customer and the service provider are involved in the service delivery process, however, it is easier to customize the service based on the customer’s specific instructions.” (Hoffman and Bateson, 1997, pp. 34-35).

If service providers are inherently better able to meet a diverse set of customer needs, satisfaction should be higher with services than with products. Although inconsistent with the differences reported between products and services to date, the argument is sound. Reconciling these competing arguments requires a theoretical framework within which a variety of potentially competing factors and their effects on customer satisfaction can be simultaneously considered. We argue that a dynamic theory of competition that has evolved over the last half century provides such a framework.

### **3. A dynamic view of competition and market behavior**

Dynamic theories of competition and market behavior have existed for some time, most notably within the Austrian School (Garrison, 1978; Reekie and Savitt’s, 1988). The dynamic view took hold in marketing through Alderson’s work on sorting and transformation processes and his concept of market matching (Alderson, 1957, 1965). A

primary feature of Alderson's work is its focus on the process of how markets operate. Alderson's framework replaces homogeneity with heterogeneity as the economic norm. This heterogeneity exists with respect to both that which customers demand and that which suppliers offer. Marketing is viewed as a dynamic or ongoing process of attempting to attain a match between heterogeneity in demand and heterogeneity in supply (versus the attainment of a static equilibrium).

Alderson describes this process as a conversion of "resources as they occur in nature into meaningful assortments in the hands of consumers" (Alderson, 1965, p. 92). The process is composed of an alternating sequence of *sorts* and *transformations*. A sort is the categorizing, assembling and assigning of resources, such as the bringing together of raw materials in a manufacturing facility or restaurant. A transformation is a change process, such as the manufacture or crafting of a product from its parts or the cooking of a meal from raw materials in a restaurant. Alderson argues that these transformations add form, space and time utility. Moreover, sorting always intervenes between the transformation just completed and the one that is to follow.

Another feature of the framework, and the dynamic theories in general, is that total congruence between supply and demand is constantly sought but never completely achieved. This is due to the fact that both demand and supply are constantly affected by changes in space, time, technology, form, and information. The degree of congruence that is achieved has two important implications. One is that congruence allows suppliers, in a competitive environment, to extract more surplus from customers and earn a greater profit. Indeed, this is a fundamental premise of marketing. When a supplier is better at meeting the needs of a particular market segment, they become the preferred alternative

for which customers will pay some premium. A second implication, which is central to our discussion, is that congruence should increase customer satisfaction. As Reekie and Savitt argue, the sorting process “both satisfies consumer wants and creates supplier discrepancies” (1988, p. 58). It is these discrepancies that provide opportunities for entrepreneurial activity.

Alderson’s approach has much in common with Austrian economics and more recent dynamic theories of marketing. Following Garrison (1978) and Reekie and Savitt (1988), Alderson’s market matching is equivalent to Hayek’s notion of aggregate production time. The production begins with only unsorted goods, the heterogeneity in supply is “meaningless”, and economic incentives exist for entrepreneurs to add value based on foreseeable future profits. Value, in the form of heterogeneity, is added over time (after some degree of sorting and transforming). At any given point in time, “tradable” supplies emerge from the process.

Customers are engaged in a similar matching process (Reekie and Savitt, 1988). Customers “search” through the heterogeneity of supply using a variety of learning mechanisms, involving both direct experience with market offerings and indirect experience through market and personal communications. The output of these joint sorting processes is a potential exchange of congruent goods, where differentiation in supply is designed to match different customer needs. As noted, the degree of congruence that is actually achieved should result in both higher satisfaction for customers and higher profits for suppliers.

The more recent approaches in marketing build upon Alderson and the Austrian School. Dickson (1992) distinguishes between macro-market behavior and firm behavior

(competitive rationality). The macro-market is characterized by continuous changes in both the heterogeneity of supply and the heterogeneity of demand. That is, both economic processes and buyers preferences are constantly changing. Individual firms competing in this environment vary with respect to their willingness to innovate or improve, their ability to learn from their experiences, and their ability to implement what they have learned. Dickson argues that this is why total congruence between heterogeneity in demand and heterogeneity in supply is constantly sought but never achieved. Hunt and Morgan (1992) also argue that demand and supply are heterogeneous and constantly changing. They further emphasize that both customer information and firm information is imperfect and costly, which is consistent with our argument that congruence is constantly sought but not achieved. Taken together, the dynamic approaches predict systematic and meaningful variation in congruence and resulting customer satisfaction at any given point in time.

### **3.1 Application to products, services, and public agencies**

This dynamic view of competition allows us to contrast the matching process that occurs in the production of physical products (or “goods”) with the production of services. When applied to the industries surveyed in the national indices, these differences are naturally more a matter of degree than kind. The framework also allows us to examine how factors such as competition affect the process.

Consider first the difference between physical products and services. Alderson notes that services present unique problems. Because the customer enters the working inventory and is part of the production system, there are “special difficulties in applying the standard pattern of alternating sorts and transformations” (Alderson, 1965, p. 97).

Most obvious is that the number of sorts and transformations that are required to ultimately produce a service is much greater. A certain number of sorts and transformations are required to produce the goods that service providers and customers use as input to the service production process (such as the supplies and physical facilities of a hospital). There is then a succession of additional sorts and transformations required to ultimately produce the service (such as a patient's stay in a hospital).

Physical products are produced at a time and in a place of the supplier's choosing and not in the presence of customers. In contrast, the service part of the process is described as co-production. As noted earlier, services are produced in the customer's presence, at a time and in a place of the customer's choosing, with the customer's input. These aspects of co-production limit the opportunity afforded by time to add value to a service because services are produced "on demand." Co-production also introduces the inconsistencies inherent in human behavior, on part of both the employees and the customer, into the production process itself (such as absenteeism, appearance, mood, physical health, and the fallibility of human judgment). And unlike products, if something goes wrong in the service production process, it is often too late to institute quality controls before the service reaches the customer (Hoffman and Bateson, 1997).

Now consider the implications for heterogeneity, congruence and resulting customer satisfaction. Services are potentially more heterogeneous than are physical products. This is due to the greater number of sorts and transformations required moving from raw materials and resources to a delivered service. However, within Alderson's framework, there is a commensurate increase in the heterogeneity of potential demand. Consider a simple example in which there are two groups of customers, one who prefers

fish and the other who prefers beef. If the two groups were to purchase and prepare the fish or beef themselves, much of the customization of the final offering (a meal) to individual tastes and needs occurs after the product is purchased. Individuals may prepare the fish gilled, broiled, baked, or fried. If a restaurant purchased the same fish or beef, the customization would occur in the co-production phase or service factory. As a result, there is no particular customization advantage for services vis-à-vis physical products that would increase the congruence between supply and demand and increase customer satisfaction. Services allow for greater customization. But service customers also demand greater customization, the customization they would perform on their own if they were to purchase the means to perform the service themselves.

Now consider that the sorts and transformations that occur in the co-production or service phase of the overall production process are inherently less reliable than the sorts and transformations required to produce a physical good. Because services are produced on demand using more of the human resources of the firm and customers themselves, the ultimate heterogeneity of the service is compromised. Fornell and Johnson (1993) argue similarly that, because services are more inherently unreliable and difficult to standardize, they are difficult to differentiate and customize. Overall, therefore, the congruence between the heterogeneity of demand and supply should be generally lower for services than for physical products.

Another major distinguishing feature of services is their intangibility. Services can not be “touched or felt” in the same way as physical products (Grönroos, 1990; Hoffman and Bateson, 1997). The market-matching framework again facilitates our understanding of the effects of intangibility on satisfaction. Intangibility makes it

inherently more difficult to display or communicate differentiated service offerings to customers. For example, customers find it particularly difficult to distinguish among the offerings of alternative insurance providers and financial services (Fornell and Johnson, 1993). Insurance companies and banks provide attributes and benefits that customers often have trouble picturing and sampling prior to purchase. Within the market-matching framework, this intangibility further limits the degree of congruence ultimately achieved. Even though a meaningful heterogeneity in supply may exist, it is simply more difficult for service customers to understand and identify it.

Our discussion of market matching and congruence predicts that customer satisfaction is lower for competitive services and retailers than for competitive physical products, which we state formally as hypothesis one.

**H1: Customer satisfaction is lower for competitive services and retailers than for competitive products across countries.**

Again, while this hypothesis is supported by ACSI data (Fornell et al., 1996) and is consistent with earlier studies (Andreasen and Best, 1977; Wikström, 1983), it has not been tested across the three broad-based national indices in Sweden, Germany and the US.

The effects of competition on the market matching process are quite straightforward. Traditionally, government or public agencies have enjoyed some degree of restricted competition or monopoly power (such as mail, police, and tax services). The lack of competitive offerings in these markets eliminates the entrepreneurial incentives to increase the value of goods through sorting and transforming. Put simply, there are fewer incentives to target market segments with products or services that better meet their needs (Dickson, 1992). Sorting in these cases is more likely to be determined by government

regulations or charters (such as meeting certain safety or quality requirements or serving market segments the agency is required to serve). Because customers are relative “hostages” in such a system, they are forced to put up with a higher degree of incongruence. Accordingly, we expect customer satisfaction to be lower among public and government agencies whose competition is restricted. Although this prediction is supported using data from the ACSI (Fornell et al., 1996), it has not been tested across all three national satisfaction indices or barometers. This prediction is stated formally as hypothesis two.

**H2: Customer satisfaction is lower for public and government agencies than for more competitive products, services and retailers across countries.**

### **3.2 Application across countries**

With the exception of Wikström’s (1983) research and other early comparisons of complaining behavior by Thorelli (see Day and Perkins, 1992), little attention has been paid to examining satisfaction difference across countries. Alderson’s framework can again be used to postulate systematic differences among the three national databases from Germany, Sweden and the US.

Following our earlier discussion of the effects of competition, we argue that the entrepreneurial incentives that drive the market matching process are greater in the United States than in either Germany or Sweden. The result is a significantly greater heterogeneity in supply and resulting congruence between supply and demand in the US. The greater heterogeneity of supply is evident from simple observations of the greater number of soft drinks, cereals, juices, cars, appliances, and other products offered to US customers.



The differences among the countries are based on multiple socio-political, cultural, and structural factors that affect the incentives to participate in entrepreneurial activities.<sup>3</sup> Tax rates are generally higher in both Sweden and Germany than in the US. The tax rate in Sweden in 1995 was 50.2% of GDP, compared to 39.1% in Germany and 27.6% in the US.<sup>4</sup> Sweden and Germany also provide more support for the unemployed, which again inhibits incentives to add value through entrepreneurship. In the US, only 0.5% of GNP is used to support the unemployed compared to 3.8% and 4.5% in Germany and Sweden respectively.<sup>5</sup> There are structural barriers that also limit the sorting and transformation process in Germany and Sweden vis-à-vis the US. For example, it takes only 3 to 5 months on average to receive permission to develop new production facilities in the US compared to 8 to 10 months in either Germany or Sweden.<sup>6</sup> Another barrier is language. Whereas English is among the most used languages in the world, German is less used and only a relatively small number of people know Swedish. This makes it that much more difficult to enter both the Swedish and the German market compared to the US.

Culturally, it may be argued that being “close to the customer” is simply not a European value or habit compared to the US. A customer orientation, and the economic profits it provides, may simply not be valued to the same degree in countries such as Germany and Sweden where greater emphasis is placed on equality. For example, whereas Germans and Swedes place greater value on their positions in society (such as being a physician or professor), Americans place greater value on financial rewards

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<sup>3</sup> Note that the database we use to test our hypotheses uses SCSB, DK and ACSI data from 1994 through 1997. Thus, this section focuses on statistics obtained during or immediately after this time period.

<sup>4</sup> Source: Sweden Statistics (SCB), 1998.

<sup>5</sup> Source: Institute der Deutschen Wirtschaft, Köln, Germany, 1998.

resulting in a greater disparity in incomes in the US than in other developed, western economies (Myrdal, 1973).

Consistent with these arguments, independent studies rate the overall competitiveness of the US economy above that of either Germany or Sweden. The Index of Economic Freedom, which rates different countries on a scale from 1 (very much) to 5 (very little) rates the US, Germany, and Sweden at 1.90, 2.30 and 2.85 respectively.<sup>7</sup> Similarly, the World Competitiveness Yearbook rates the US at number 1 in the competitiveness of its overall economy, Sweden is number 16, and Germany is number 19.<sup>8</sup> Overall, these arguments suggest that the ability of the sorting and transformation process to add value and increase the congruence between heterogeneity in supply and heterogeneity in demand is significantly greater in the US compared to either Germany or Sweden. This difference in congruity should be reflected in the levels of customer satisfaction on a national level. This prediction is stated formally as hypothesis three.

**H3: For a given type of industry (products, services and retailers, and government and public agencies), customer satisfaction is lower in Germany and Sweden compared to the United States, while Germany and Sweden are more equal.**

#### **4. Empirical study**

The hypotheses are tested using a database that combines three established national satisfaction indices or barometers in Sweden, Germany, and the US. The SCSB, DK and ACSI surveys were established in 1989, 1992 and 1994 respectively. In the analyses that follow, satisfaction data from each country is analyzed and reported on a 0

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<sup>6</sup> Source: Institute der Deutschen Wirtschaft, Köln, Germany, 1998.

<sup>7</sup> Source: The Heritage Foundation and the Wall Street Journal, 1998, Index of Economic Freedom.

<sup>8</sup> Source: The World Competitiveness Yearbook 1997, IMD, Lousane, Switzerland.

to 100-point scale. Not included are more recent indices (such as the NCSB and ECSI) that limit their coverage to a small number of competitive service industries.

It is important to keep in mind that the SCSB and ACSI share a common methodology compared to the DK. Recall that cumulative satisfaction, as a synonym for consumption utility, is a relatively latent variable or construct. This latent satisfaction is reflected in a variety of evaluations and comparisons that customers make, including performance versus expectations, competing products, category norms, and personal desires. The solution within the SCSB and ACSI is to operationalize satisfaction as an index of three survey measures: overall satisfaction, expectancy-disconfirmation, and performance versus an ideal product or service in the category. These measures are each rated on 10-point survey scales and the 0 to 100-point satisfaction scores represents weighted indices of the three survey measures. The survey measures are highly correlated in both the SCSB and ACSI and yield a reliable satisfaction index (Fornell, 1992; Fornell et al., 1996). In contrast, the 0 to 100-point satisfaction values reported for the DK represent a simple transformation of a single 1 to 5 point satisfaction-to-dissatisfaction scale.

Another property of the Swedish and American indices is that they are estimated within a system of cause and effect relationships (a causal model). Customer perceptions of quality, value, and expectations are antecedents in both the current ACSI and SCSB models, while complaint behavior and loyalty are viewed as consequences. Both models are designed to predict customer loyalty as the ultimate endogenous variable. Although the DK survey includes measures other than satisfaction, there is no satisfaction model per se.

Our database includes industry-level observations from 1989 through 1997 for the SCSB, 1992 through 1997 for the DK, and 1994 through 1997 for the ACSI. The industries included in the various surveys are listed in Table 1. The industries are classified according to their primary representation as a competitive product industry, competitive service industry, or government and public agency. The classifications are based on standard industrial classification (SIC) codes used in the respective countries with one exception. The ACSI has traditionally classified gas-service stations as a manufactured non-durable (a product). To be consistent with the other countries, the evolution of gas stations into more cross-category retailers, and recent changes in SIC codes themselves, we classify this industry under competitive services and retailers for all three countries.

This does not mean that industries are identically classified in each case. For example, deregulated industries classified as competitive services in the US (such as Telecommunications and Broadcast TV) remained public agencies in Sweden and Germany over the time period that our data was collected. (More recently, Telecommunications has been deregulated in both Sweden and Germany.)

- insert Table 1 about here -

#### **4.1 Satisfaction across industry types and countries**

To summarize, H1 and H2 predict that satisfaction should be highest for competitive products, lower for competitive services, and lower still for public and government agencies. H3 predicts that satisfaction is systematically higher for each industry type in the US compared to either Germany or Sweden. Our test of these hypotheses uses a sample of industry-level satisfaction results taken from the three

countries over the time period 1994 through 1997. All of the data is taken from the same four-year period to remove potential confounds due to time. (After 1997, the number of industries measured in the SCSB was reduced by over 50%.) There are a total of 369 industry-level satisfaction measures available for the analysis. A general linear model was estimated in which country was a three-level factor (Germany, Sweden, United States), industry type was a three-level factor (competitive product, competitive service, government and public agency), and the year the data was collected was used as a covariate. All two- and three-way interactions involving the two factors and the covariate were included in the model.

Because of inherent differences in the industries sampled from country to country, the number of observations varies from cell to cell in the design. The number of observations for products, services, and government and public agencies respectively is 16, 86, and 32 for Sweden, 14, 51, and 33 for Germany, and 49, 64, and 24 for the US. Thus competitive products are more heavily sampled in the US while government and public agencies are more heavily sampled in Sweden and Germany. As a result, any support for H1 and H2 creates a difference in satisfaction across countries that is due solely to the type of industries sampled, which confounds our test of H3. To address this problem, it is essential to test H3 within (versus across) industry types.

The average levels of satisfaction by country and industry type are presented in Figure 1. The tests for effects are reported in Table 2. The results reveal significant main effect differences for country ( $F = 44.084, p < 0.001$ ) and industry type ( $F = 28.827, p < 0.001$ ) but not for year. Planned contrasts of the factor-level means reveals significant satisfaction differences, in the predicted directions, when comparing competitive

products and competitive services/retailers ( $p < 0.01$ ) and when comparing competitive services/retailers and government and public agencies ( $p < 0.001$ ). Thus the differences reported in earlier studies are supported using a cross-national sample of three countries using two different measurement methodologies. Similar contrasts reveal differences in satisfaction among the three countries. Recall, however, that these contrasts are confounded by the industries sampled.

- insert Figure 1 and Table 2 about here -

Although the main effect differences predicted by H1 and H2 are supported, our results also reveal a significant country by industry type interaction ( $F = 3.499, p < 0.01$ ). Looking at Figure 1, a couple of observations appear to be driving this interaction. The predicted pattern of results across industry types is very similar in Sweden and the US. In Germany, however, there is little difference between products and services/retailers while government and public agencies rate particularly low. For example, although satisfaction with services and retailers is 65 in both Germany and Sweden, satisfaction with government and public agencies in Sweden is 61 versus 51 in Germany.

A series of planned contrasts was performed to examine more closely the differences in industry type by country. In the US, the predicted differences between both products and service and between services and public agencies are significant ( $p < 0.05$  and  $0.001$  respectively). However, when looking only at the Swedish data, none of the contrasts for industry type approached significance. When looking only at the German data, there was a significant difference in the predicted direction between services/retailers and government and public agencies ( $p < 0.001$ ), a marginally significant difference between products and public and government agencies ( $p < 0.07$ ),

but no difference between products and services themselves. Thus there are important differences observed in the significance and pattern of industry differences in Germany and Sweden compared to differences found here and reported previously using the US data (Fornell et al., 1996).

Recall that testing H3 requires a separate analysis because of the differences in the number of industries sampled by industry type across countries. Separate linear models were estimated for the competitive products, competitive services and retailers, and public and government agencies. The models included a three-level factor for country, time as a covariate, and the potential interaction between country and time. The estimation results reveal significant main effects for country in each case. Again, however, a series of planned contrasts of the factor-level means is required to more directly test H3.

For competitive product industries, satisfaction in Germany and Sweden did not differ while both were significantly lower than the US ( $p < 0.05$ ). The same was true for services and retailers, where Germany and Sweden did not differ, but both showed lower levels of satisfaction than in the US ( $p < 0.001$ ). For the government and public agencies, satisfaction in the US was higher than satisfaction in Sweden, which was higher than satisfaction in Germany (all contrasts significant at  $p < 0.001$ ). Thus H3 is supported with one exception, where public and government agencies were lower in Germany than in Sweden.

Overall our tests provide support for all three hypotheses. At the same time, the results reveal very different magnitudes and patterns of satisfaction differences across

countries and industry types. The implications of these results for managers and policy makers are discussed at the end of the paper.

#### **4.2 Satisfaction in overlapping industries**

Our initial analysis demonstrates both similarities and differences in the patterns and levels of satisfaction across countries. The analysis also raises two important questions. First, recall that the DK uses a very different survey and measurement methodology than that used in both the SCSB and ACSI. It remains unclear just how much the methodological differences may be contributing to the observed satisfaction differences. Second, even though our analysis uses data from the same period of time, different industries are sampled in the different countries. This may also contribute to the results. This prompted us to perform a second analysis to examine more closely just how comparable satisfaction is between countries when the industries overlap.

However, this was difficult to do in the case of the US where the number of overlapping industries is small relative to Germany and Sweden. And as noted earlier, some of the overlapping industries in the US belong to different industrial organization categories due to their deregulation. In contrast, there are 17 industries that overlap between Germany and Sweden that are identically classified as products, services and retailers, or government and public agencies over the time period that the data was collected (automobiles, gas-service stations, property insurance, newspapers, personal computers, supermarkets, banks, department stores, parcel delivery, mail delivery, telecommunications, police services, airlines, pharmacies, tour operators, railways, and broadcast TV). We thus conducted a separate comparison of these industries for the two countries.



A contrast of these industries is interesting for two reasons. As predicted under H3, Germany and Sweden should exhibit relatively similar levels of satisfaction by industry. As mentioned, very different methodologies are also used to provide satisfaction measures in Germany and Sweden. Recall that satisfaction in the SCSB (and ACSD) is based on an index of three survey measures, all rated on 10-point scales (higher scale values = higher satisfaction). Satisfaction in the DK is based on a single 5-point scale where the anchors are reversed (higher scale value = lower satisfaction) albeit re-scaled for analysis. Data is available for most all of these industries in each of the years 1992 through 1997.

We focus on using industry satisfaction in one country to explain industry satisfaction in the other country. To do so, a partial least squares (PLS) model (Fornell and Cha, 1994; Wold, 1982) was estimated in which satisfaction in Germany was one latent variable used to explain satisfaction in Sweden as another latent variable using the 17 industries as observations.<sup>9</sup> Following a procedure by Fornell and Johnson (1993), the model uses each year's data as a separate satisfaction measure for the industry. This type of model extracts the common covariance in satisfaction over time. Essentially, it models the serial correlation in satisfaction over time for a given industry and country. A small number of industries were not sampled in a given year for Germany (n=5) and Sweden (n=6). In these cases, the industry averages over time, by country, were used as proxies for the missing values in order to provide a complete data matrix.

The measurement loadings and path coefficient for this model are shown in Figure 3. The analysis reveals a remarkably high level of correspondence in industry-

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<sup>9</sup> Specification of the direction of causation does not effect the model in this case because only two latent variables are involved. The path coefficient is equivalent to the latent variable correlation.

level satisfaction between the two countries. First, the relatively high and uniform measurement loadings suggest that satisfaction is quite stable over time in both countries, at least for the time period 1992-1997. The loadings range from 0.971 to 0.992 for Germany and from 0.935 to 0.983 for Sweden. The relationship in satisfaction between Germany and Sweden over the time period is also very high as revealed by the path coefficient value (latent variable correlation) of 0.846. According to the model, industry satisfaction in Germany explains 72% of the variation in industry satisfaction in Sweden. These results are particularly interesting given the fact that very different measures, as mentioned, are used to operationalize satisfaction in the two countries.

- insert Figures 2 and 3 about here -

To illustrate the nature of the relationship, the latent variable scores for each industry are presented in Figure 4. Foremost, the figure illustrates just how systematic the levels of satisfaction are across the two countries. The results further support the comparability of satisfaction in making broad-based comparisons. They also suggest that, at least at the industry level of aggregation, methodological differences in how satisfaction is measured between Germany and Sweden are not large.

#### **4.3 Satisfaction differences in Sweden over time**

The results in Figure 3 also help us to understand some of the differences observed in Figure 1. Certain public and government agencies in Sweden, particularly postal services and telecommunications, have systematically higher levels of satisfaction than their counterparts in Germany. This prompted a third analysis to examine whether satisfaction for public and government agencies in Sweden has always been so high. In

the analyses conducted thus far, satisfaction has not shown great variation over time.

Rather, satisfaction differences appear quite stable.

However, these analyses did not incorporate the early years in which satisfaction was measured in Sweden. The evolution of the various indices and barometers has also been quite different in the three countries. Unlike the DK or ACSI; the SCSB was developed in large part to provide public agencies (such as the postal service, telephone company, and railway) an opportunity to benchmark their performance against more competitive industries and improve their customer satisfaction. Many public agencies in Sweden have been under pressure for more than a decade to become more customer oriented to compete effectively in a more open market. In the last decade, the politicians have opened up the postal service, telecommunication, and the electricity to more competition. In order to prepare for this, these companies began early on to focus more effort on their customers.

This suggests that the higher levels of satisfaction for public and government agencies in Sweden may not have existed prior to these developments and more closely matched the German industries. The public agencies in Sweden may have improved their customer satisfaction over time *relative* to more competitive products and services. Put differently, as the public agencies in Sweden started acting more like competitive companies that focus on customers, did they approach competitive services and retailers in aggregate customer satisfaction?

A general linear model was used to test this prediction across the twenty-seven Swedish industries for which a 1989-1996 time series is available.<sup>10</sup> Once again

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<sup>10</sup> The 1997 SCSB was omitted from this analysis because of the relatively large number of missing values during this time period (10 out of 27 industries). These missing values are more problematic in the present

satisfaction is the dependent variable. The independent variables were a three-level factor for industry type, a covariate for year, and a type by year interaction. The prediction is that as the public and government agencies in Sweden have become more customer oriented, or added more value within Alderson's market matching framework, satisfaction with these agencies has approached the levels of satisfaction achieved for more competitive services. That is, the time by industry type interaction should be significant.

The Swedish time series are illustrated in Figure 4 and the estimation results are provided in Table 3. Consistent with earlier analyses, there is an overall significant effect of industry type on satisfaction ( $F = 14.494, p < 0.001$ ). In support of our prediction regarding time, there is also a marginally significant time by industry type interaction effect ( $F = 2.801, p < 0.063$ ). Over time, the government and public agencies have been able to "close the gap." There has been a significant increase in Swedish satisfaction with government and public agencies such that it has approached satisfaction levels for services and retailers. This is particularly evident in the early years of the SCSB. In more recent years, the differences by industry type have been much more stable.

- insert Figure 4 and Table 3 about here -

## 5. Discussion

Obviously great care must be taken when comparing customer satisfaction across industries and countries. Yet our study and results suggest that observed differences in satisfaction across three countries are, for the most part, predictable and meaningful. The differences are driven largely by the degree to which customers are provided with

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analysis given the emphasis on time as a covariate. The missing values create a sampling-based confound between time and industries studied.

differentiated alternatives that are better able to meet a heterogeneous demand. As a result, satisfaction is systematically higher for products, more intermediate for services and retailers, and lower for public agencies across the industries studied in the three countries. The results have both management and public policy implications.

From a managerial standpoint, our results suggest that national satisfaction indices provide meaningful insight into the value added by companies and industries both within and across countries. Moreover, methodological differences between the systems used in Sweden and the US versus Germany do not appear to explain the observed differences in satisfaction. In contrast, previous studies in this area have focused on particular countries and methodologies.

The study also underscores the value of a dynamic view of competition and market behavior, and specifically Alderson's (1957, 1965) market matching framework, in helping managers to understand satisfaction differences across contexts. The framework views market matching as a process of moving from raw materials to a meaningful heterogeneity in supply. The process involves a series of sorts and transformations that, over time, produce more and more heterogeneity in supply. Although Alderson's ideas have long been central to marketing and the marketing concept, the market-matching framework has received relatively little attention (Reekie and Savitt, 1988).

The framework helps us to understand how various aspects of service production affect the congruency that can be achieved between a heterogeneous supply and a heterogeneous demand. Because services involve a greater number of sorts and transformations from raw materials to finished offering, the potential for supplying

heterogeneity is greater than for physical products alone. However, because services perform activities that customers would otherwise perform on their own, heterogeneity in demand is also increased. Theoretically, services have no inherent advantage over products with respect to the congruence between heterogeneity of supply and heterogeneity of demand.

Moreover, because the service end of the production function is marked by a co-production process that is inherently less reliable than is the production of physical products, the ultimate congruence between supply and demand and subsequent customer satisfaction should be lower for services. The intangibility of services, which makes service quality more difficult to communicate and understand, further supports this prediction. The pragmatic implication is that physical products and services have systematically different levels of satisfaction that are likely to be observed in any given market. It may be unrealistic for service firms to benchmark and target the satisfaction levels achieved by admired peers that produce physical goods.

The results have important implications for policy makers as well. Although the general pattern of results for products versus services versus government and public agencies holds across countries, the level, pattern and dynamics of satisfaction varies from country to country. The results show, for example, that both Germany and Sweden are able to compete on relatively equal terms. These countries must, however, be constantly aware of the value-adding process operating in the US and the strong competition that it produces. Thus tracking customer satisfaction could prove essential for a country's competitiveness and it may have an effect on its policies. In this sense, the development of a more open European Economic Community and a common currency

should benefit the ability of European companies to add value and compete effectively with their US counterparts.

Furthermore, the US has an advantage in terms of market size. This makes it possible to have a larger heterogeneity among companies since there will be more niches available in the market that are large enough for companies to survive. This greater heterogeneity will as a consequence increase the customer satisfaction rating for a country. Neither Germany nor Sweden has the market size to support the heterogeneity in companies to the extent as in the US. However, the definition of market size is being eroded by changes in technology. Geographic ties become less important for services as technology evolves. Going forward, it should be easier for German and Swedish companies to compete both at home and abroad. It will be interesting to see how this affects national satisfaction levels going forward.

Finally the paper illustrates that satisfaction levels are not “set in stone” by industry type. For government or public agencies that are deregulating and privatizing, it is possible to close the gap with more competitive industries. The Swedish benchmarking results support this contention where public agencies have, over time, approached the level of satisfaction provided by more competitive service industries.

The primary limitation of the present study is that the three countries involved in our study may all be considered relatively similar from a global perspective. Although systematic differences emerge, Sweden, Germany and the US are all relatively competitive and developed Western economies. It will be interesting to see how satisfaction results generalize as the cultural and economic differences inherent in the national indices grows to include other more dissimilar countries. The issues raised by

Ölander and others regarding adaptation and cultural differences will only become more salient as the scope of the indices increases. Yet our study and results suggest that satisfaction, as a proxy for consumption utility, is more comparable on a broad-basis than many ever imagined.



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Fig. 1. Customer satisfaction by country and industry type

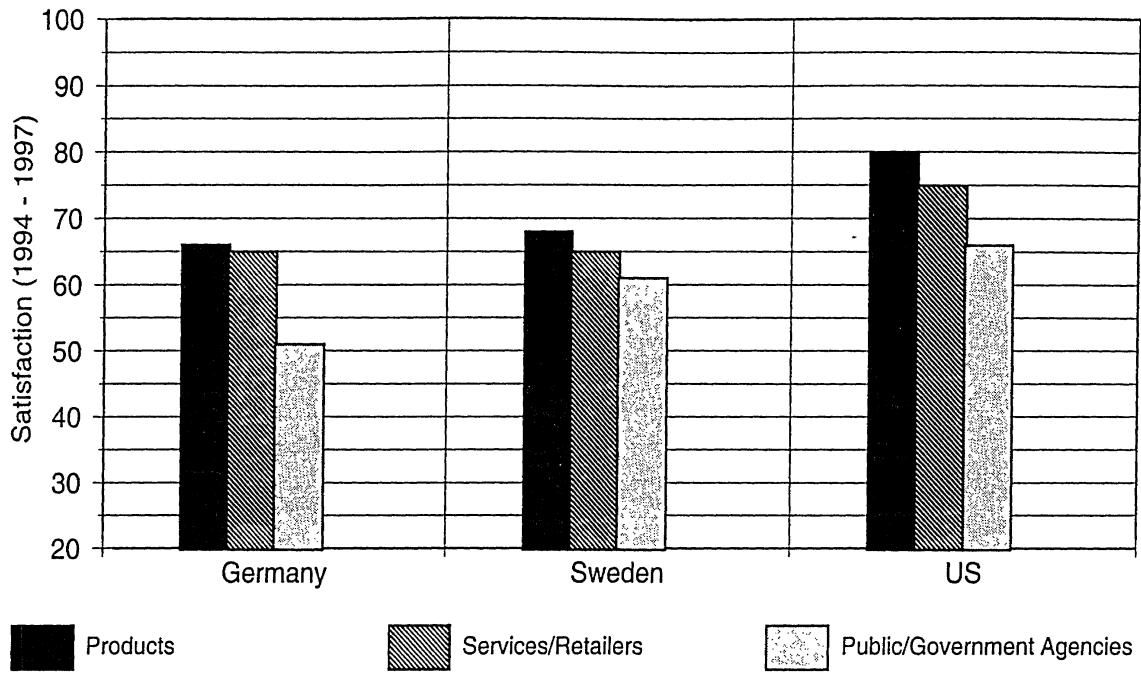


Fig. 2. PLS model for satisfaction in Germany (DK) versus Sweden (SCSB)

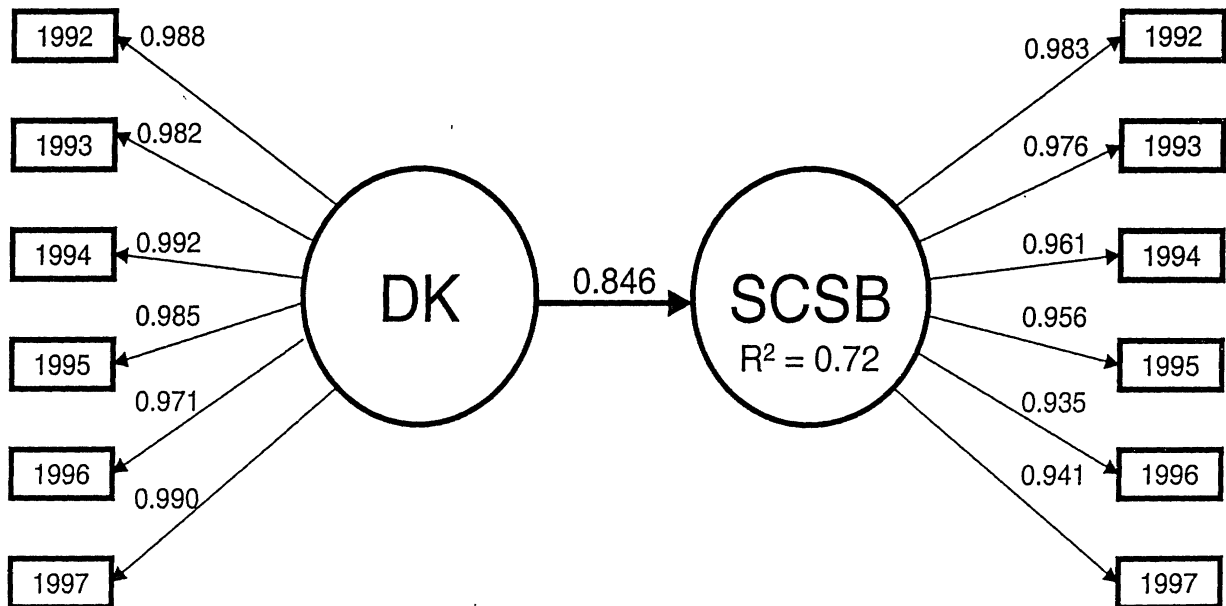
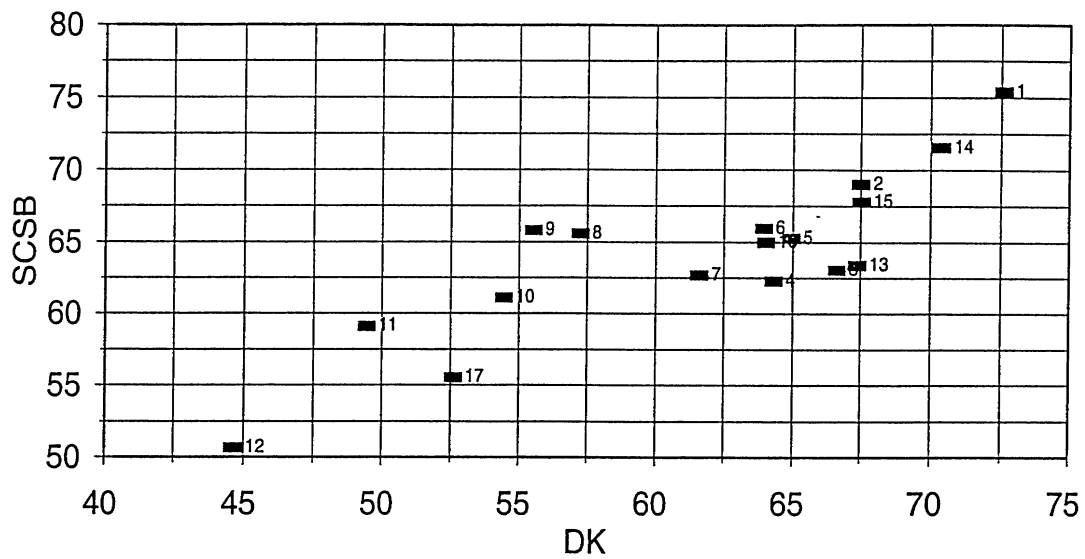


Fig. 3. Satisfaction levels for overlapping industries in Germany and Sweden



Note: 1 = Automobiles, 2 = Gas-Service Stations, 3 = Property Insurance, 4 = Newspapers, 5 = Supermarkets, 6 = Banks, 7 = Department Stores, 8 = Parcel Delivery, 9 = Postal Service, 10 = Telecommunications, 11 = Police, 12 = Broadcast TV, 13 = Airlines, 14 = Pharmacies, 15 = Tour Operators, 16 = Mail Order Companies, and 17 = Railway.

Fig. 4. The SCSB over time

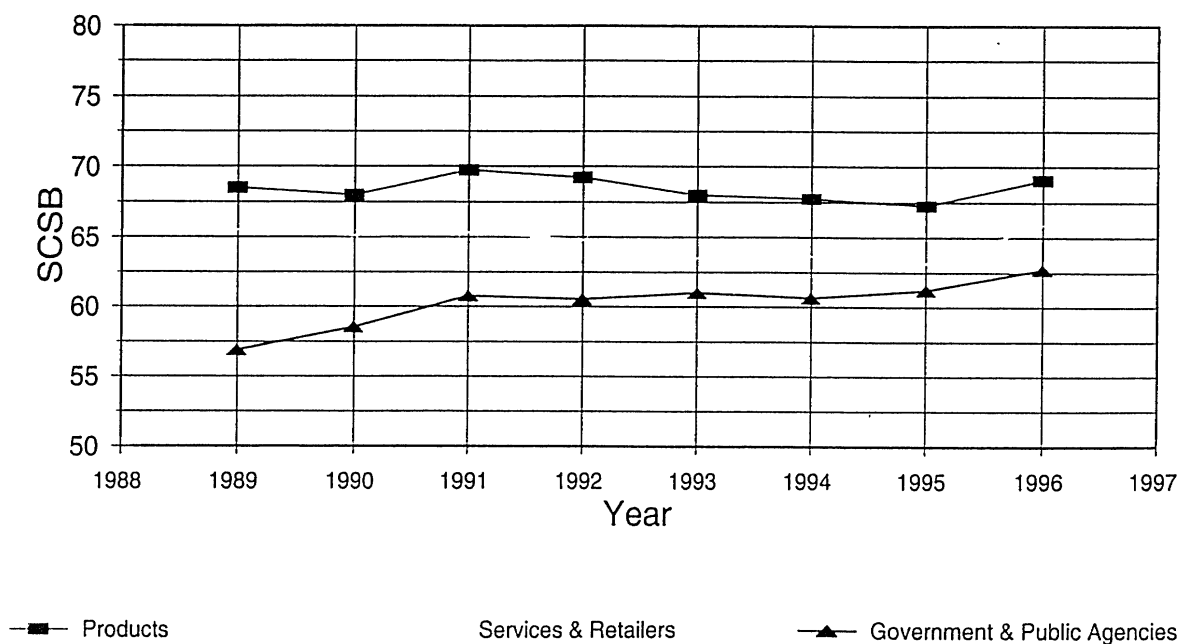


Table 1. Industries surveyed by country

|                                    | Sweden (SCSB)  | Germany (DK)   | United States (ACSI)   |
|------------------------------------|--|--|--|
| Competitive Products               | Automobiles<br>Food Processing<br>Newspapers<br>Personal Computers (Business)  | Automobiles<br>Magazines<br>Newspapers<br>Personal Computers<br>Software<br>TV Magazines   | Apparel<br>Athletic Shoes<br>Automobiles<br>Beverages - Beer<br>Beverages - Soft Drinks<br>Consumer Electronics<br>Food Processing<br>Household Appliances<br>Newspapers<br>Personal Care Products<br>Personal Computers<br>Pet Foods<br>Tobacco - Cigarettes  |
| Competitive Services and Retailers | Airlines<br>Banks (Business)<br>Banks (Public)<br>Clothing Retailers<br>Department Stores<br>Furniture Retailers<br>Gas - Service Stations<br>Grocery Stores<br>Insurance (Business)<br>Insurance (Life)<br>Insurance (Property)<br>Mail Order Companies<br>Shipping<br>Travel (Charter) | Airlines<br>Appliance Repair<br>Auto Associations<br>Banks<br>Building Societies<br>Car Repair Services<br>Charity Organizations<br>Credit Card Companies<br>Department Stores<br>Doctors<br>Drug/Variety Stores<br>Elderly Care<br>Electronics/Appliance Stores<br>Furniture Stores<br>Gas - Service Stations<br>Holiday Destinations<br>Home Improvement Centers<br>Hospitals and Clinics<br>Insurance (Health)<br>Insurance (Property)<br>Lawyers<br>Mail Order Companies<br>Parcel Delivery<br>Pharmacies<br>Religious Organizations<br>Supermarkets<br>Tour Operators<br>Vehicle Inspection | Airlines<br>Banks<br>Broadcast TV<br>Department and Discount Stores<br>Electric Service<br>Gas - Service Stations<br>Hospitals<br>Hotels<br>Insurance (Life)<br>Insurance (Property)<br>Motion Pictures<br>Parcel Delivery - Express Mail<br>Restaurants - Fast Food<br>Supermarkets<br>Telecommunications - Long Distance<br>Telecommunications - Local |
| Government and Public Agencies     | Broadcast TV<br>Pharmacy<br>Police<br>Postal Service (Business)<br>Postal Service (Public)<br>Railroad<br>Telecommunications (Business)<br>Telecommunications (Public)<br>Wine & Spirits   | Broadcast TV<br>Police<br>Postal Service<br>Public Administration<br>Public City Transportation<br>Railway<br>Telecommunications<br>Waste Disposal   | Internal Revenue Service<br>Police - Central<br>Police - Suburban<br>Postal Service<br>Waste Disposal - City<br>Waste Disposal - Suburban  |

Table 2. Model results for the effects of country, industry type and time on satisfaction

| Source                       | Type III Sum of Squares | df  | Mean Square | F        | Sig.  |
|------------------------------|-------------------------|-----|-------------|----------|-------|
| <b>Corrected Model</b>       | 21890.00                | 17  | 1287.65     | 55.214   | 0.000 |
| <b>Intercept</b>             | 203903.00               | 1   | 203903.00   | 8743.350 | 0.000 |
| <b>Country</b>               | 2056.17                 | 2   | 1028.09     | 44.084   | 0.000 |
| <b>Industry Type</b>         | 1344.52                 | 2   | 672.26      | 28.827   | 0.000 |
| <b>Year</b>                  | 1.66                    | 1   | 1.66        | 0.071    | 0.790 |
| <b>Country X Type</b>        | 326.36                  | 4   | 81.59       | 3.499    | 0.008 |
| <b>Country X Year</b>        | 84.61                   | 2   | 42.30       | 1.814    | 0.165 |
| <b>Type X Year</b>           | 32.88                   | 2   | 16.44       | 0.705    | 0.495 |
| <b>Country X Type X Year</b> | 114.54                  | 4   | 28.64       | 1.228    | 0.299 |
| <b>Error</b>                 | 8185.64                 | 351 | 23.32       |          |       |
| <b>Total</b>                 | 2.E+06                  | 369 |             |          |       |
| <b>Corrected Total</b>       | 30075.60                | 368 |             |          |       |

Table 3. Model Results for the effects of industry type and time on satisfaction in Sweden

| Source                 | Type III Sum of Squares | df  | Mean Square | F        | Sig.  |
|------------------------|-------------------------|-----|-------------|----------|-------|
| <b>Corrected Model</b> | 1820.59                 | 5   | 364.12      | 12.994   | 0.000 |
| <b>Intercept</b>       | 139694.00               | 1   | 139694.00   | 4985.110 | 0.000 |
| <b>Industry Type</b>   | 812.32                  | 2   | 406.16      | 14.494   | 0.000 |
| <b>Year</b>            | 15.94                   | 1   | 15.94       | 0.569    | 0.452 |
| <b>Type X Year</b>     | 157.01                  | 2   | 78.50       | 2.801    | 0.063 |
| <b>Error</b>           | 5884.68                 | 210 | 28.02       |          |       |
| <b>Total</b>           | 885339.00               | 216 |             |          |       |
| <b>Corrected Total</b> | 7705.28                 | 215 |             |          |       |