E-satisfaction: a re-examination

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Abstract

E-satisfaction as a construct has gained increasing importance in the marketing literature in recent times. The examination of consumer satisfaction in an online context follows the growing consensus that in Internet retailing, as in traditional retailing, consumer satisfaction is not only a critical performance outcome, but also a primary predictor of customer loyalty and thus, the Internet retailer’s endurance and success. The current study replicates the initial examination of e-satisfaction within the U.S. by Szymanski, David M., & Richard T. Hise (2000). E-satisfaction: An initial examination. Journal of Retailing, 76(3), 309–322 among a sample of online consumers drawn from Germany. The replication was extended to two contexts—consumer satisfaction with Internet retail shopping and consumer satisfaction with Internet financial services sites. The results yield rich insights into the validity of extending the measurement and predictors of e-satisfaction to a trans-national context.

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While the share of U.S. Internet retail sales remains less than four percent of total U.S. retail sales (U.S. Census Bureau 2003), the share of e-commerce sales is steadily growing in the U.S. as well as worldwide. According to Taylor Nelson Sofres Interactive’s “Global e-Commerce Report,” the worldwide increase in e-commerce activity is most evident for certain product categories, such as books, music CDs, videos, electrical and electronic goods, sports equipment, and toys, and for services such as consumer banking and finance, and health information (Direct Marketing 2002). The growth in Internet activity globally could be attributed to the rapidly increasing number of computer users and the progressive development of Internet infrastructure in most countries, including the traditional developing countries (Dutta, Lanvin, & Passa 2003).

In an environment characterized by failures for most dot-com ventures, the rapid growth of a few Internet firms, such as Amazon.com and e-Bay as well as the successful transition to the Web by some traditional retail firms, such as Barnes & Noble and Office Depot, have called sharp attention to the strategies that may contribute to a firm’s success in its Internet venture. A consensus seems to favor superior customer service and its consequent impacts on customer satisfaction and customer loyalty (Grewal, Iyer, & Levy 2004; Rust & Lemon 2001; Winer 2001). Indeed, recent discussions on the loyalty of Internet retail customers as well as the programmatic strategy of customer relationship management, have given a position of central importance to the study of satisfaction of Internet-channel customers (Anderson & Srinivasan 2003; Winer 2001).

Common technological underpinnings (e.g., the TCP/IP protocol), a similar supra-technological infrastructure (e.g., access modes, prevalence of ISPs), and common governance of crucial issues (e.g., domain name assignments), have facilitated the global spread of the Internet and the WWW. Various governmental, nonprofit and for-profit market research organizations, such as the World Economic Forum, Asia-Pacific Economic Cooperation e-Commerce Steering Group, McConnell International, and Metricnet.com, compare the information and communications technology infrastructure worldwide along some common dimensions (Dutta & Jain 2003). However, several dimensions of e-commerce activ-
Satisfaction in the e-commerce context

Satisfaction, according to Oliver (1997, p. 13) is the “consumer’s fulfillment response.” Further, according to Oliver (1997, p. 14), “a fulfillment, and hence a satisfaction judgment, involves at the minimum two stimuli—an outcome and a comparison referent.” In this context, both Szymanski and Hise (2000) and this study conceptualize e-satisfaction as the consumers’ judgment of their Internet retail experience as compared to their experiences with traditional retail stores.

While the subject of satisfaction has been discussed extensively in the services and traditional retailing literature (Anderson, Fornell, & Lehmann 1994; Bitner, Brown, & Meuter 2000; Caruana, Money, & Berthon 2000; Cronin & Taylor 1992; Oliver 1981; Parasuraman, Zeithaml, & Berry 1988; Zeithaml, Berry, & Parasuraman 1996), the exploration of dimensions and determinations of satisfaction in the e-commerce context is at a relatively nascent stage. It is not clear if the dimensions used to evaluate satisfaction in a traditional retail or service setting are the relevant dimensions to evaluate satisfaction in the technology-mediated encounter (Anderson & Srivastava 2003; Bitner et al. 2000; Janda, Trochhia, & Gwinner 2002; McKinney, Yoon, & Zahedi 2002; Meuter, Ostrom, Roundtree, & Bitter 2000; Parasuraman & Grewal 2000). The most obvious difference between traditional and electronic retail services is the replacement of human-to-human interaction with human-to-machine interaction and therefore, new or modified approaches to conceptualizing and measuring satisfaction may be needed for e-commerce settings.

However, the basic importance of satisfaction and its consequent effects appear to remain intact even in e-commerce settings. Developing a broad framework for customer relationship management through the Internet, Winer (2001) accords central attention to satisfaction as the overall goal of a firm’s relationship programs. Adopting a broad definition of e-service, or the role of service over the Internet, Rust and Lemon (2001) argue that improving e-service capabilities would enable a firm to develop better relationships with their customers. Anderson and Srinivasan (2003) find that the impact of e-satisfaction on e-loyalty is the greatest in the presence of consumer-level moderator factors, such as convenience motivation and purchase size, and business-level factors, such as trust and perceived value.

On the other hand, the exploration by Szymanski and Hise (2000) provides an elucidation of the drivers of satisfaction in e-commerce settings. Initial focus group interviews with online shoppers suggested that e-satisfaction was the outcome of online shopping convenience, merchandising (product information and product offerings), site design, and financial security (Szymanski & Hise 2000). They developed measures for these key constructs and tested them using an online sample of 1,007 respondents, finding that all five drivers of e-satisfaction had positive effects on e-satisfaction, and all but product offerings had a significant (p < .05) impact on e-satisfaction. Similar results were also obtained in a different context by Burke (2002), who found that online shoppers were most satisfied with the convenience, product quality, value provided, and product selection offered by the online shopping experience.

While confirmation for the importance of e-satisfaction and its antecedent drivers is beginning to emerge in the U.S., it is not clear how well these concepts and associated theories...
translate to other national and cultural contexts. Given that the theories of e-satisfaction are based on consumer perceptions, do these perceptions translate well to other cultural contexts? Crossing national boundaries exposes theories and concepts to a host of institutional and environmental differences that not only affect the ability to generalize theories developed in the U.S., but also challenge the relationships that are commonly accepted as “given” within the U.S. context (Farley & Lehmann 1994). Therefore, theories developed within the U.S. must undergo further validation through research in different contexts and cultures outside of the U.S. before they are accepted as universal (Boddewyn & Iyer 1999; Boyacigiller & Adler 1991).

The replication of Szymanski and Hise (2000) in Germany provides a case for validation of the theories of e-satisfaction found in the U.S. to a trans-national context. The importance of replication in marketing to assert the stability of research results has been argued succinctly by Monroe (1992a). As Easley, Madden, and Dunn (2000) propose, replication or reproducibility is essential to the goal of theory development and refinement. If the relationships between e-satisfaction and its drivers, as uncovered by Szymanski and Hise (2000), could be generalized across populations, the external validity of that initial research and hence its “law-like” generalization could be better established (Cook & Campbel 1979; Monroe 1992a).

On one hand, it can be noted that Germany is quite comparable to the U.S. in terms of its level of economic development, especially the institutional environment, economic size, and consumer purchasing power. On the other hand, Germany is at a stage behind the U.S. in terms of the development of the World-Wide Web and of the adoption and diffusion of computers and the Internet by individuals and households. When information on German network readiness and the use of the Internet by German business and consumers is taken into account, it appears that Germany is following a trajectory of Internet and e-commerce development somewhat similar to that of the United States (Gfk Group 2003, Monroe 1992a). These similarities are especially striking in terms of technological infrastructure development and consumer adoption of the Internet. Yet, in terms of Internet retail entrepreneurship and strategies, it is expected that newer Internet and e-commerce business models developed in the U.S. context would be adopted given the traditional, historical, and institutional patterns. Thus, further insights can be gained on the application to Germany of Internet research developed in the United States and the specific firm strategies that need to be followed by German e-tailers in ensuring e-satisfaction.

In order to replicate the Szymanski and Hise (2000) study, we developed a similar study and applied it to the contexts of Internet retail shopping and Internet banking in Germany. These two application contexts are referred to as “e-shopping” and “e-finance,” respectively, in the discussion that follows. The next few sections highlight the methodology and results.

### Methodology

Measurement items as provided in Appendix A to Szymanski and Hise (2000) were translated into German. Scale items were duplicated within the questionnaire for two different Internet contexts—one for Internet shopping sites and the other for Internet finance sites. Respondents were asked to respond on a 5-point Likert-type scale to the questionnaire items, first for the case of Internet shopping and then for Internet banking sites. In both cases, respondents' overall satisfaction with each Internet experience—shopping and banking—was asked first followed by the measures for the exogenous variables. Respondents were also asked about their frequency of use of Internet shopping and e-banking sites.

The online version of the questionnaire was set up on the survey portal “http://www.e-satisfaction.de/” and introduced to a panel of roughly 2,000 people who had participated in earlier studies conducted via that portal. The panel consists of roughly 65 percent males and 35 percent females with an average age of 35 years and is found to be quite representative of the German online population when compared with a recent report from the Gfk Group (2003). Panel members were initially recruited by advertisements in German retail journals and on German university homepages. Of these 2,000 people, 351 participated in the survey between June and July 2001, constituting a participation rate of approximately 18 percent. However, this participation rate may not include the panel members exclusively, since the participants were asked to forward the survey to anyone they thought might be interested in participating. This approach was used since many of the e-mail addresses of the original panel members were believed to be inactive.

Given the nature of the study, the method of online questioning was chosen since the substantive issues under investigation focused on online consumer behavior. The selection of the Internet panel as a sampling frame essentially ensured that all potential participants were familiar with the Internet. At another level, online data collection was found to be more economical due to negligible data coding costs (or, for that matter, printing, duplication and mailing costs) since respondent-entered data from the Website was easily exported to an SPSS-compatible format. Moreover, since respondents interfaced with only their computers, there is no potential interviewer bias in the data (Gray 2000).

However, there are some additional issues that need to be addressed in online data collection. The first is consumer familiarity with the Internet so that the technology is a facilitator and does not adversely affect consumer participation or their responses (Ilieva, Baron, & Healey 2002). Since our data was collected from an established online panel and from willing respondents outside of the panel, there is reason to believe that this was not an issue for our study. Second, online surveys have to be kept short to ensure participation and
faithful completion (Szymanski & Hise 2000). The questionnaires were sent to respondents who had been identified as compared to the Szymanski and Hise (2000) sample. Thus, the mean age of the respondents is lower and the sample were 44 years, 73 percent, and 88 percent, respectively. In terms of the product information, site design, and financial security—were estimated using regression. Cases with standard residuals above a threshold values of .9, being exactly .94 for e-shopping and .93 for e-finance), while the Adjusted Goodness of Fit Index (AGFI) is slightly less than .9 in both models (.94 for e-shopping and .93 for e-finance). The Root Mean Square Error of Approximation (RMSEA), which indicates the fit of the model with unknown but optimally chosen parameter values to the population covariance matrix, falls short of recommended values for a good fit (Browne & Cudeck 1993). The RMSEA of .08 for the e-shopping context and the RMSEA of .09 for the e-finance context both indicate mediocre fit (MacCallum, Browne, & Sugawara 1996). However, both the Normed Fit Index (NFI) and the Non-Normed Fit Index (NNFI) meet the threshold values of .9, being exactly .9 in both contexts (Hair et al. 1998). Similar to Szymanski and Hise (2000), the unique effects of predictor variables—convenience, product offerings, product information, site design, and financial security—were estimated using regression. Cases with standard residuals above three were identified as outliers and eliminated. The variance inflation factors (VIF) were scrutinized and all were found to be in the range between one and two for both the e-shopping and e-finance applications. Myers (1990) indicates that only if the VIF is above 10, there is cause for some concern about multicollinearity. However, the highest VIFs in the e-shopping application and e-finance applications were found to be only 1.41 and 1.72, respectively, indicating that multicollinearity is well within acceptable limits. Regression results for two applications in our study are given in Table 2 along with the results obtained by Szymanski and Hise (2000) for their sample. The impact of product information on satisfaction was not significant in the e-shopping application.
application. The other four predictors, however, are all in the hypothesized direction and significant at a p value of .05. These results compare well to Szymanski and Hise (2000) regression results, wherein confirmation was obtained for only four of the five hypothesized effects. Note that while Szymanski and Hise (2000) found no significant support for the impact of product offerings on e-satisfaction, the current e-shopping application shows no support for the impact of product information on e-satisfaction. Further, similar to Szymanski and Hise (2000), convenience has the greatest impact on the levels of e-satisfaction in the current e-shopping application (β = .26), followed by site design (β = .14).

One explanation for the nonsignificant impact of product information on e-satisfaction could lie in the fact that for German consumers, price information is more important than product information (Werben & Verkaufen 2003a, 2003b). This may be due to the fact that the German retail sector is characterized by small stores and specialized outlets. Contrast this to the U.S., where for several decades, the trend has been towards enabling consumers a “one-stop shopping” experience through providing a wide assortment of products. The quality and quantity of information on the product offerings would be more important for consumers in the U.S. than for those in Germany. Thus, product information would have a greater impact on e-satisfaction in the U.S. than in Germany.

The e-finance application in our study yields somewhat different results. Here, the standardized coefficients for product offerings and financial security are not statistically significant. While the lack of confirmation for the hypothesized effects of product offerings in this application is similar to Szymanski and Hise (2000), the lack of confirmation for financial security appears puzzling, especially given that security concerns are very high for Web users globally (Direct Marketing 2002). However, one reason could be that German consumers generally have high levels of trust towards financial service providers, especially banks (Semin Brand-Broker GmbH 2003). Large German banks enjoy a solid brand reputation built over time and through the trust that people have historically reposed on them. Also, another underlying reason why the banks could be trusted is that the German banking sector is heavily regulated, probably more so than in the U.S. (Bundesverband deutscher Banken 2000).

Since both the e-shopping and e-finance applications in this study are replications of the Szymanski and Hise (2000) study, a direct comparison of the relationships obtained in the two studies was done using the approach suggested by Cohen (1988). The Pearson r for the predictor variables and the dependent variable—e-satisfaction—were transformed to Fisher’s z for the Szymanski and Hise (2000) results and for the results from both of our applications. We estimated the absolute value of Cohen’s q as the nondirectional difference between the Fisher’s z for Szymanski and Hise (2000) results

$$q = \frac{1}{2} \log \left( \frac{1 + z}{1 - z} \right)$$
Table 3
Absolute values of effect sizes (Cohen’s $q$) for comparisons with Szymanski and Hise (2000) using correlations of e-satisfaction with replication study comparisons

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>E-shopping</th>
<th>E-finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping convenience</td>
<td>.06</td>
<td>.04</td>
</tr>
<tr>
<td>Product offerings</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>Product information</td>
<td>.18</td>
<td>.07</td>
</tr>
<tr>
<td>Site design</td>
<td>.09</td>
<td>.06</td>
</tr>
<tr>
<td>Financial security</td>
<td>.12</td>
<td>.21</td>
</tr>
</tbody>
</table>

* Indicates sample $q$ values that are greater than those necessary for significance at the .05 level, given the sample size differences. Thus, for product information in the e-shopping model, and for financial security in the e-finance model, the obtained differences are significant between Szymanski and Hise (2000) and the replication.

and each of our applications. These Cohen’s $q$ values, as provided in Table 3, were then compared with the criterion value of $q$ for the estimated harmonic mean of the $(n-3)s$ of the two sample sizes, as given in Cohen (1988) for a two-tailed $p$ value of .05. The effect size obtained by Szymanski and Hise (2000) for product information was significantly greater than that obtained by us in the e-shopping application. Similarly, the Szymanski and Hise (2000) effect size for financial security was significantly greater than those obtained in the e-finance application in our study.

Discussion

Overall, we find moderately good results for the application of the Szymanski and Hise (2000) model to the context of German e-shopping, and slightly less so for the context of German e-finance. The CFA model fits the data moderately well in both contexts and the overall results yield some confirmation of the Szymanski and Hise (2000) findings. Similar to Szymanski and Hise (2000), we find that convenience and site design are the most important and second most important drivers of e-satisfaction, respectively, for both the e-shopping and e-finance contexts. To hazard a generalization, Internet firms should allocate more attention and resources to elements that enhance consumer convenience. Moreover, firms should ensure that the design of their Websites provides additional value, as compared with traditional experiences, for the consumers.

On another note, the LISREL results on modification indices and residuals gave us directions for modifications to the CFA models. Based on these results, we re-ran the analysis after eliminating two indicators—ease of browsing and fast information presentations. It is generally recommended that any revision to the confirmatory factor analysis model must have some accompanying theoretical justification (Hayduk 1996). Given that the primary purchases of German consumers from e-shopping sites were books, CDs, clothes, electronics, and cinema and theater tickets (Euromedia 2002), they may have engaged more in a directed search rather than browsing through a variety of offerings. At another level, it must be noted that most German traditional (brick-and-mortar) retail stores are smaller in size as compared to their U.S. counterparts due to historical regulations (Levy & Weitz 2004). As such, browsing in such smaller stores may be easier, and therefore, the relative value of “ease of browsing” through Internet sites may not be as markedly different from traditional store experiences.

While the above discussion provides some reasoning behind eliminating the “ease of browsing” indicator, empirical results show that Web page responsiveness (as measured by “download time”) does not have an effect on overall satisfaction (Otto, Najdawi, & Caron 2000). Similarly, unless the time taken is unduly long, “fast presentation of information” may not have a noticeable impact. Also, there is greater variance in this measure due to the fact that consumers may connect to the Internet through a variety of access ramps (modems, broadband, wireless) and the inherent speed of their connections could interact with their evaluation of the speed of information presentation by Websites they visit.

Re-analysis of the confirmatory factor analysis model after dropping these two measures yielded an extremely good fit between the data and the proposed model for both the application contexts. The GFI and AGFI for e-shopping were now .98 and .96, while those for e-finance were .97 and .91. Similarly, the parsimonious fit measures also showed a marked improvement (NFI was .98 for e-shopping and .95 for e-finance; NNFI was .99 for e-shopping and .94 for e-finance). Moreover, the RMSEA was .02 for e-shopping and .07 for e-finance, both indicating a good fit (MacCallum et al. 1996).

The above discussion also points to a limitation of this study. Without cross-national data, we were unable to evaluate the cross-national equivalence of the constructs measured (Steenkamp & Baumgartner 1998). However, it could also be argued that this trans-national application provides some sense not only of the external validity of the initial results, but also presents some guidelines and directions on the extent to which the measures need to be equivalent. Nevertheless, future research involving e-satisfaction and its antecedent drivers can gain considerably from establishing measurement equivalence. This would aid not only in arriving at more valid conclusions, but also in better theory development (Horn and McArdle 1992).

In replication research, the “sameness” of the results is emphasized (Monroe 1992a), as compared to the focus on “differences” in most cross-national research. Moreover, evaluation of the replication results must be based on comparing effect sizes rather than simply on obtained statistical significance (Monroe 1992a). The comparison of effect sizes between the replications and the original Szymanski and Hise (2000) study, as in Table 3, suggest several points of...
similarity. However, more replications involving other countries and application contexts are needed to better establish the boundary conditions for the original results (Monroe 1992b).

One does not need a crystal ball to state that the Internet, as well as the interactions between firms and customers through this medium, will continue to be in a state of constant flux. The rapid pace of technological change, consumer experience levels, and firm strategies call greater attention to the time-dependency of research on Internet issues. Unlike theories and empirical studies involving, for instance, department stores and other physical retailers, empirical research examining Internet retail issues reflect only a specific period in the evolution of e-tailing, and, thus, have limited currency. Future research must be sensitive to the temporal context of empirical observations and therefore be more guarded in arriving at conclusions. Further, as this trans-national application may serve to demonstrate, theories generated and validated in the U.S., though seemingly “universal,” should undergo further empirical testing in other countries before they are indeed established as applicable and before their “law-like” generalization is used as a base for further theory and research.

Conclusion

Our study found that the model of e-satisfaction and its drivers, as originally proposed by Szymanski and Hise (2000), fits moderately well to consumer perceptions in two German online contexts—Internet shopping and Internet finance. The effect sizes are largely comparable, despite sample and context differences, leading us to the conclusion that at least some of the drivers of e-satisfaction may be context-invariant. Others, such as financial security of the transactions, need more detailed and specific scrutiny within any given Internet context.

The replication of Szymanski and Hise (2000) in Germany yields some rich managerial insights. First, e-satisfaction and its associated drivers are important not only in the U.S. context but should also be the focus of Internet firm strategies in Germany. Second, convenience and site design are the most important drivers of e-satisfaction for both U.S. and German consumers. At the minimum, the Internet strategies of retail and financial services firms in these countries should focus on ensuring that they are providing additional value to the consumer in terms of shopping convenience and should provide an easily navigable and value-adding site design. Finally, Internet firms in Germany as well as German divisions of multinational corporations must first test the generalizability of supposedly universal recommendations before applying them to Germany, or, for that matter, to any trans-national context.

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Appendix A. Measurement scales and reliabilities

<table>
<thead>
<tr>
<th>Measurement scale</th>
<th>Coefficient alpha</th>
<th>Szymanski and Hise (2000)</th>
<th>Current study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate Internet storefronts relative to traditional</td>
<td>.69</td>
<td>.61</td>
<td>.67</td>
</tr>
<tr>
<td>retail stores on each of the following dimensions:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total shopping time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of browsing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merchandising—product offerings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate Internet storefronts relative to traditional</td>
<td>.92</td>
<td>.90</td>
<td>.89</td>
</tr>
<tr>
<td>retail stores on each of the following dimensions:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of offerings</td>
<td></td>
<td></td>
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<tr>
<td>Variety of offerings</td>
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</tbody>
</table>
Appendix A (Continued)

<table>
<thead>
<tr>
<th>Measurement scale</th>
<th>Coefficient alpha</th>
<th>Symanksi and Hise (2000)</th>
<th>Current study</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-shopping</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of informaion</td>
<td>.91</td>
<td>.85</td>
<td>.84</td>
</tr>
<tr>
<td>E-finance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity of informaion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sidesign</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presenting uncluttered screens</td>
<td>.72</td>
<td>.76</td>
<td>.81</td>
</tr>
<tr>
<td>Providing easy-to-follow search paths</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presenting information fast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial security</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial security of the transaction</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Overall, how do you feel about your Internet-shopping experience?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very satisfied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very dissatisfied</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Very displeased</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Very pleased</td>
<td></td>
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</tbody>
</table>

* In the current study, a single item measure was used for customer satisfaction, since the word “zufrieden” in German could alternatively imply satisfied or pleased (e.g., zufrieden gestellte = satisfied, and zufriedenste = most pleased).

References


