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# Cyborg Service: The Unexpected Effect of Technology in the Employee–Guest Exchange

## Abstract

Hotels, restaurants, and other hospitality industry operations are experimenting with self-service kiosks, tablet devices, and other technologies intended to augment or replace interactions between guests and front-line employees. While the combination of technology and people is designed to improve service, research suggests that service technologies can impede development of employee-guest rapport and lead to lower service evaluations. The studies presented in this report apply social equity theory to determine when (and why) technology can improve guests' satisfaction with the service process and when it diminishes the guest experience. Equity theory suggests that when the use of technology prevents guests from responding to an employee's friendly advances, guests experience psychological tension and decrease their evaluations of the service experience. The reverse situation also applies, so that when employees are less than friendly the barrier created by technology increases service evaluations by reducing guest anger. However, it is not always the case that friendly frontline staff and technology don't mix. In a follow up field experiment, guests who used a Monscierge Connect Lobby touchscreen located not far from a bell stand preferred interacting with the technology when a hotel employee was nearby though not directly engaging guests. Thus, frontline employees should still develop a rapport with guests, but when technology acts as an "equity barrier," the employees should provide guests with "social space," without abandoning them entirely.

## Keywords

service technology, employee-guest exchange, guest satisfaction, equity theory

## Disciplines

Hospitality Administration and Management

## Comments

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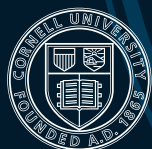
The Unexpected Effect of Technology in the Employee–Guest Exchange

by Michael Giebelhausen, Ph.D.

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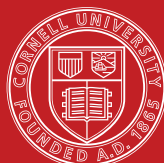
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# Cyborg Service:

## The Unexpected Effect of Technology in the Employee-Guest Exchange

by Michael Giebelhausen

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### EXECUTIVE SUMMARY

**H**otels, restaurants, and other hospitality industry operations are experimenting with self-service kiosks, tablet devices, and other technologies intended to augment or replace interactions between guests and front-line employees. While the combination of technology and people is designed to improve service, research suggests that service technologies can impede development of employee-guest rapport and lead to lower service evaluations. The studies presented in this report apply social equity theory to determine when (and why) technology can improve guests' satisfaction with the service process and when it diminishes the guest experience. Equity theory suggests that when the use of technology prevents guests from responding to an employee's friendly advances, guests experience psychological tension and decrease their evaluations of the service experience. The reverse situation also applies, so that when employees are less than friendly the barrier created by technology increases service evaluations by reducing guest anger. However, it is not always the case that friendly frontline staff and technology don't mix. In a follow up field experiment, guests who used a Monsierge Connect Lobby touchscreen located not far from a bell stand preferred interacting with the technology when a hotel employee was nearby though not directly engaging guests. Thus, frontline employees should still develop a rapport with guests, but when technology acts as an "equity barrier," the employees should provide guests with "social space," without abandoning them entirely.

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## ABOUT THE AUTHOR



**Michael Giebelhausen**, Ph.D., is an assistant professor of marketing at the Cornell University School of Hotel Administration. He earned his Ph.D. in Marketing from Florida State University, graduate degrees from Loyola University Chicago, and undergraduate degrees from the University of Illinois, as well as a “Ductorate” from Walt Disney University. He teaches Marketing Management for Services and Marketing Research, and he has been honored with the FSU College of Business Ph.D. Teaching Award and the Cornell School of Hotel Administration Ted Teng '79 Dean's Teaching Excellence Award. His research focuses on consumer behavior and signaling in service settings with a particular emphasis on the effects of green marketing.

The author expresses his appreciation to J.D. Power for providing data for this study.

# Cyborg Service:

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**P**ick up any book on how to run a successful service organization and you are sure to find multiple chapters stressing the importance of frontline employees for creating an excellent guest experience, representing the brand, and so on. These books underscore the fundamental characteristic of services, as compared with physical goods, which is that services cannot be disentangled from the employees who deliver them.<sup>1</sup> Hospitality firms known for their legendary service, such as the Walt Disney Company and Ritz-Carlton, commonly cite the secret to their success as their ability to inspire and empower their customer-contact employees.

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<sup>1</sup> For example, see: Valarie A. Zeithaml, Ananthanarayanan Parasuraman, and Leonard L. Berry, "Problems and Strategies in Services Marketing," *Journal of Marketing*, 1985, pp. 33-46.



Given the importance of the relationship between employees and guests, then, it might seem strange that hospitality firms are supplementing or replacing employee-guest interactions with self-service technologies. Chili's, for instance, has just completed the installation of over 4,500 tabletop kiosks that allow diners to search the menu, read about specials, order their food, and pay the bill.<sup>2</sup> Similarly, the hotel industry is moving towards an increasingly automated check-in experience featuring self-service kiosks.<sup>3</sup>

The goal here is to improve customer service through technology.<sup>4</sup> However, even as they adopt self-service technologies, companies still recognize the importance of employee-guest interaction. Delta Airlines, for one, has sent all 11,000 of its gate, counter, and baggage agents to "charm school,"<sup>5</sup> even as the airline encourages passengers to use self-service technology as much as possible.

The problem is that charm and technology do not seem always to mix. An article my colleagues and I recently wrote for the *Journal of Marketing*, titled "Touch Versus Tech: When Technology Functions as a Barrier or a Benefit to Service Encounters,"<sup>6</sup> presents a series of studies that portray two different outcomes from self-service technology. On the one hand, when interactions between frontline employees and customers are characterized by high levels of rapport, introducing self-service technology decreases overall service evaluations. On the other hand, when rapport is negative, technology seems to improve guests' service evaluation. For this purpose, we use Gremler and Gwinner's definition of customer-employee rapport: "a customer's perception of having an enjoyable interaction with a service provider employee, characterized by a personal connection between the two interactants."<sup>7</sup> Rapport building typically involves such

actions as pleasant conversation, attentive customer service, and knowledge sharing.<sup>8</sup>

In our *Journal of Marketing* article, we suggest that the reason technology can be a barrier between customers and employees is that technology demands guests' attention.<sup>9</sup> Even common self-service technologies such as credit card scanners require guests to focus and essentially learn instantly how to operate an unfamiliar piece of equipment. Although scanner operation seems relatively straightforward, the consumer still must orient the card's magnetic stripe, swipe at the appropriate speed, indicate whether the card is debit or credit, confirm the amount of the purchase, and provide a signature within the appropriate space. Furthermore, this process is not identical at all providers. Sometimes signatures are not required, sometimes the scanner solicits a charitable donation, and other times consumers still must show their card to the employee or enter their ZIP code. As they complete these tasks, the consumers' attention is devoted to the technology rather than the employee. This interferes with the mutual attention that such researchers as Tickle-Degnen and Rosenthal have argued is essential to the development of interpersonal rapport.<sup>10</sup> When technology commandeers a consumer's attention in this way, it is more difficult for consumers to reciprocate any rapport-building efforts offered by the employee, and service evaluations can suffer.

However, this supposed barrier does not always damage the guest's overall evaluation of the service interaction. For the *Journal of Marketing* study we examined data from the 2011 and 2012 J.D. Power Guest Satisfaction Index.<sup>11</sup> The data collected in these studies suggests that using a self-service kiosk increases ratings of the overall check-in and check-out experience when rapport building is low, but it decreases check-in and check-out ratings when rapport building is high. In particular, guests who reported that the front desk person was courteous, responsive, and knowledgeable tended to be less satisfied with the overall experience when they used a kiosk. The opposite outcome was observed in situations where the employee was noticeably (one standard deviation) below average in terms rapport-building actions. In these situations, use of self-service technology increased evaluations of the check-in experience.

I believe that equity theory offers a useful explanation for these findings. First, I'll discuss equity theory and then

<sup>2</sup> Megan Garber, "Chili's Has Installed More than 45,000 Tablets in Its Restaurants," (viewed 8/18/2014) [available at [www.theatlantic.com/technology/archive/2014/06/chilis-is-installing-tablet-ordering-at-all-its-restaurants/372836/](http://www.theatlantic.com/technology/archive/2014/06/chilis-is-installing-tablet-ordering-at-all-its-restaurants/372836/)].

<sup>3</sup> Julie Weed, "Speedy Check-in Lets Hotel Guests Bypass Front Desk," (viewed 8/18/2014) [available at [www.nytimes.com/2013/03/19/business/speedy-check-in-lets-hotel-guests-bypass-front-desk.html?pagewanted=all&r=0](http://www.nytimes.com/2013/03/19/business/speedy-check-in-lets-hotel-guests-bypass-front-desk.html?pagewanted=all&r=0)].

<sup>4</sup> Htmagazine.com (2011), "2011 Hospitality Industry Self Service Tech Study"

<sup>5</sup> Scott McCartney, "Delta Sends its 11,000 Agents to Charm School," Wall Street Journal, February 3, 2011, p. 1 (online.wsj.com/articles/SB10001424052748704775604576120080627254652).

<sup>6</sup> Michael Giebelhausen, Stacey G. Robinson, Nancy J. Sirianni, and Michael K. Brady Giebelhausen, "Touch Vs. Tech: When Technology Functions as a Barrier or a Benefit to Service Encounters," *Journal of Marketing*, Vol. 78, No. 4 (2014), pp. 113–124.

<sup>7</sup> Dwayne D. Gremler and Kevin P. Gwinner, "Customer-Employee Rapport in Service Relationships," *Journal of Service Research*, Vol. 3 (2000), p. 92.

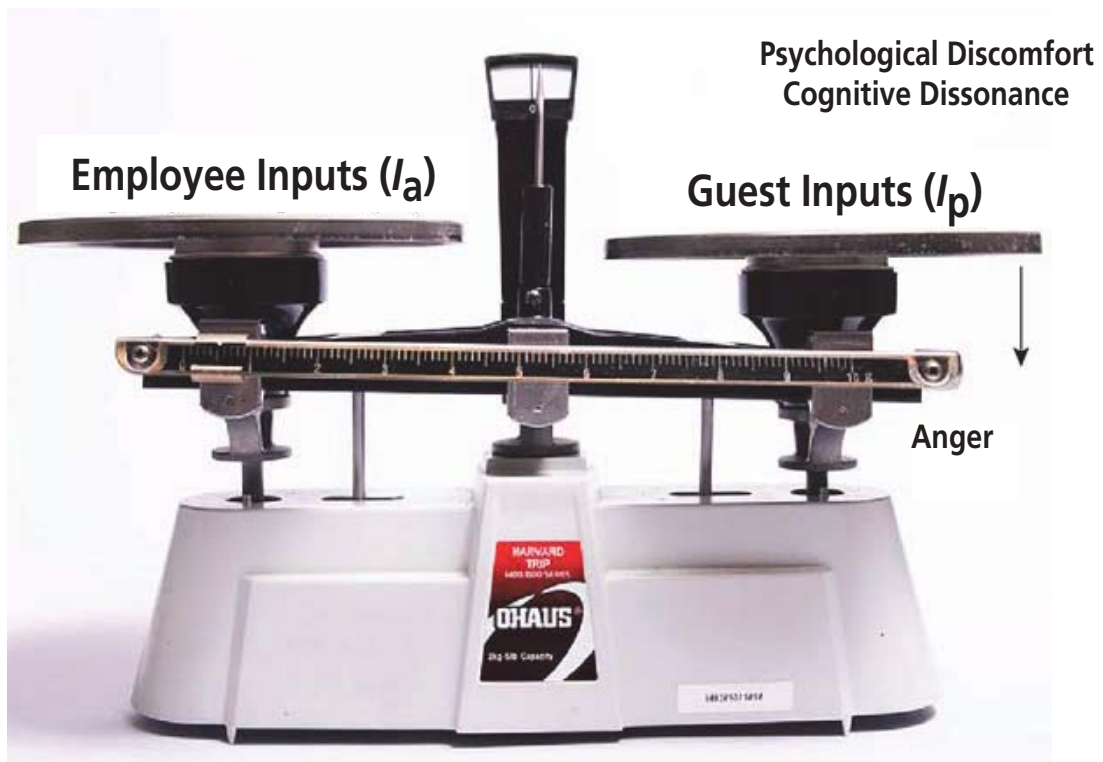
<sup>8</sup> Dwayne D. Gremler and Kevin P. Gwinner, "Rapport-Building Behaviors Used by Retail Employees," *Journal of Retailing*, Vol. 84 (2008), pp. 308–324.

<sup>9</sup> Giebelhausen *et al.*, *op. cit.*

<sup>10</sup> Linda Tickle-Degnen and Robert Rosenthal, "The Nature of Rapport and its Nonverbal Correlates," *Psychological Inquiry*, Vol. 1 (1990), pp. 285–293.

<sup>11</sup> Giebelhausen *et al.*, *op. cit.*

## Equity theory in the context of interpersonal rapport



Equity theory suggests that if the guest feels the scale is tipped to the left and the employee is contributing more to the exchange, psychological discomfort arises due to the cognitive dissonance of not reciprocating. On the other hand, if the balance is tipped to the right, and the guest feels that the employee is not responding appropriately to her efforts to build rapport, anger results. Technology can modify both interactions.

I'll present two studies that tested this explanation for the observed effects.

### Theoretical Framework

**Equity theory.** As described half a century ago by J.S. Adams, equity theory describes how individuals respond to the relative balance of inputs and outcomes during a social exchange.<sup>12</sup> In brief, the theory posits that individuals believe that their social interactions with other people should be equitable (that is, balanced). Adams further proposes that equity within a social dyad (in this case, employee and guest) can be expressed as a simple equation that compares the perceived ratio of outcomes to inputs contributed by a person (p) with that contributed by another social exchange partner (a), as depicted in Exhibit 1. Where  $O$  equals the sum of all outputs and  $I$  equals the sum of all inputs, equity can be expressed schematically as the situation where  $O_p/I_p = O_a/I_a$ . In the

context of interpersonal rapport, this equation can be made even simpler. When a guest interacts with a frontline employee, the benefits or outputs they receive ( $O_p$ ) are the rapport-building behaviors of the employee ( $I_a$ ). Therefore, in the context of employee-customer interactions, equity is achieved when the rapport building behaviors of customers are equivalent to those of the frontline employee ( $I_p = I_a$ ). This balance can be interrupted by service technologies, which can function as a barrier that prevents customers from reciprocating the rapport building behaviors of frontline employees. The result is a situation where the customer benefits more from the social exchange than does the employee. In terms of the equity equation, the customer experiences "positive inequity."

**Emotional consequences of inequity.** Equity theory is primarily concerned with the results of inequity in personal exchanges, based on dissonance theory.<sup>13</sup> In that regard, Adams describes equity theory as "a special case

<sup>12</sup> J.S. Adams, "Towards an Understanding of Inequity," *Journal of Abnormal and Social Psychology*, Vol. 67 (1963), p. 422; and J.S. Adams, "Inequity in Social Exchange," in *Advances in Experimental Social Psychology*, Vol. 2, ed. L. Berkowitz (New York: Academic, 1965), pp. 267–299.

<sup>13</sup> Leon Festinger, *A Theory of Cognitive Dissonance* (Palo Alto, CA: Stanford University Press, (1962).

of Festinger's [theory of] cognitive dissonance."<sup>14</sup> Cognitive dissonance theory, in brief, posits that when an individual perceives an inconsistency between their beliefs and their actions, that individual will experience a psychological discomfort or tension which they are driven to resolve. Thus, even as customers seek balance in their interactions with other people, including service employees, cognitive dissonance occurs to the extent that a self-service technology prevents them from balancing out the social exchange by responding appropriately to service employees' rapport-building efforts. In a series of studies, Elliot and Devine provide evidence that the uncomfortable emotional response to dissonance can be reliably measured using self-report items that ask individuals to indicate the extent to which they feel "uneasy," "uncomfortable," or "bothered."<sup>15</sup> In summary, when individuals feel they are over benefiting during a rapport-building exchange, equity theory suggests they will experience dissonance.

The opposite situation, where the customer under benefits from the exchange with the frontline employee, also has emotional fallout, most commonly, anger.<sup>16</sup> This emotional outcome of negative inequity has been noted in numerous contexts, including close interpersonal relationships (e.g., romantic relationships) and even among monkeys and chimpanzees.<sup>17</sup> In retail transactions,<sup>18</sup> and in service interactions, it seems likely that when a customer under benefits during a service exchange (e.g., interacting with a rude, unhelpful employee), the customer will respond with anger or irritation. In summary, to the extent that social equity imbalances are responsible for the effect of self-service technology on service evaluations, we should expect customers who over benefit to experience dissonance and customers who under benefit to experience anger. I test these notions in the studies discussed in this report.

### Study 1: Check-in Kiosk Scenario

**Study 1 design.** Study 1 utilized a 2 x 2 between-subjects design, in which self-service technology was either present or absent and employee rapport-building behavior was either

positive or negative. To achieve this design, study participants were randomly selected to evaluate one of four different scenarios: (1) a friendly employee paired with a self-service technology, (2) a friendly employee with no technology, (3) an unfriendly employee paired with technology, or (4) an unfriendly employee with no technology. Participants were recruited using Amazon's Mturk online subject pool, which several observers have agreed represents a source of high quality data.<sup>19</sup> The 141 participants in Study 1 ranged in age from 19 to 67, with a mean of 34.8, and just over half were women. In terms of geography, 19.1 percent identified the area where they live as rural, 54.6 percent as suburban, and 26.2 percent as urban. Fifty-seven percent reported having at least a two-year college degree, and the vast majority (almost 81 percent) were Caucasian, with smaller percentages of African American, Hispanic, and Asian or Pacific Islander.

**Study 1 materials and procedure.** An interactive web application with audio was used to simulate a hotel check-in scenario. The background (wallpaper) of this application was an image of a hotel front desk with a self-service check-in kiosk. For the positive rapport-building group, the employee behind the desk was smiling and looking directly at the participant, while for the negative rapport group, she was frowning and looking away while holding a telephone to her ear, as shown in Exhibits 2 and 3, on the next pages. In the technology-absent conditions, the audio recording consists of the employee asking participants a number of questions about their reservation, including their desired type of bed and total number of room keys. Rapport was maintained or diminished by adjusting the "tone" of the employee's voice.

In the technology-present conditions, the same questions were asked by the check-in kiosk. Instead of answering out loud, participants in the technology-present conditions clicked buttons on the simulated kiosk. For this check-in, participants first simulated inserting their credit card to retrieve their reservation. Next, participants in these conditions proceeded through a series of screens where they switch from a room with two double beds to a king room and opt for two keys. Although the participant was not interacting with the employee, they still experienced rapport-building or -diminishing actions by having the front desk staffer either offer information in a cheerful tone or speak rudely while on the phone.

As a filter, after completing the scenario, participants were asked whether they were able to hear the audio during the simulation. They were also asked a factual question related to the audio. If the participant failed either of these checks, they were automatically routed to the end of the survey. Two data quality items are also included, which ask par-

<sup>14</sup> Adams (1963), p. 422.

<sup>15</sup> Andrew J. Elliot and Patricia G. Devine, "On the Motivational Nature of Cognitive Dissonance: Dissonance as Psychological Discomfort." *Journal of Personality and Social Psychology*, Vol. 67 (1994), p. 382.

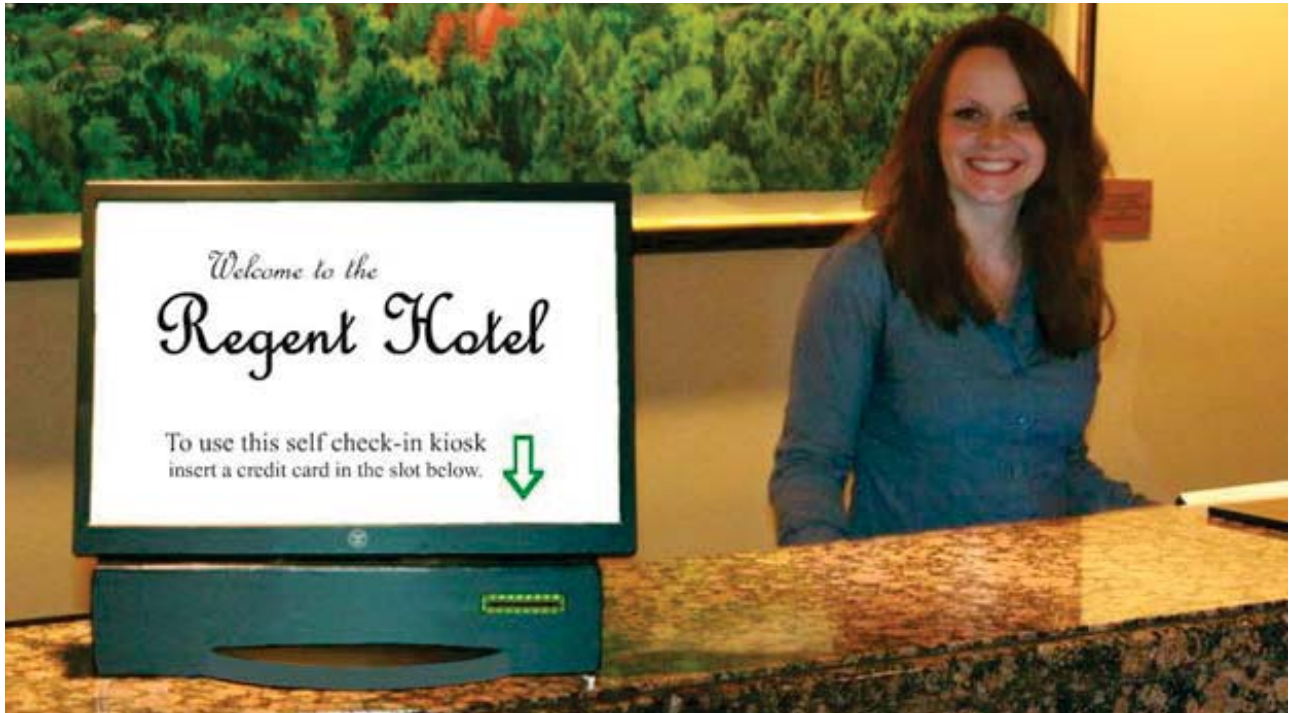
<sup>16</sup> Laura K. Guerrero, Angela G. La Valley, and Lisa Farinelli, "The Experience and Expression of Anger, Guilt, and Sadness in Marriage: An Equity Theory Explanation," *Journal of Social and Personal Relationships*, Vol. 25 (2008), pp. 699–724.

<sup>17</sup> Sarah F. Brosnan, "Nonhuman Species' Reactions to Inequity and their Implications for Fairness," *Social Justice Research*, Vol. 19 (2006), pp. 153–185.

<sup>18</sup> Darren W. Dahl, Heather Honea, and Rajesh V. Manchanda, "Three Rs of Interpersonal Consumer Guilt: Relationship, Reciprocity, Reparation," *Journal of Consumer Psychology*, Vol 15 (2005), pp. 307–315.

<sup>19</sup> For example, see: Adam J. Berinsky, Gregory A. Huber, and Gabriel S. Lenz "Using Mechanical Turk as a Subject Recruitment Tool for Experimental Research," web.Mit.edu/berinsky/www/files/MT.Pdf.

## Study 1: Self-service kiosk with positive employee rapport condition



In the technology present condition with positive employee rapport, participants saw this image...

Participants whether they answered the questions as accurately and honestly as possible. Of the 201 participants recruited, the 141 who were in the final sample passed the checks and completed all of the required measures. Perceptions of the service encounter were evaluated using a three-item, nine-point semantic differential attitude scale.<sup>20</sup> Regarding the hypothesized mediators, following the advice of Elliot and Devine, we presented participants with a list of emotions and asked them to rate how much they would experience these feelings during the check-out process.<sup>21</sup> Embedded in the list were items measuring dissonance,<sup>22</sup> negative affect,<sup>23</sup> and anxiety.<sup>24</sup> Distracter items unrelated to the conceptualization of psychological tension were also included. As a check of the rapport-building manipulation, participants

<sup>20</sup> Paul W. Miniard, Deepak Sirdeshmukh, and Daniel E. Innis, "Peripheral Persuasion and Brand Choice," *Journal of Consumer Research*, Vol. 19, No. 2 (1992), pp. 226-239.

<sup>21</sup> Elliot and Devine, *op.cit.*

<sup>22</sup> *Ibid.*

<sup>23</sup> Prashanth U. Nyer, "A Study of the Relationships between Cognitive Appraisals and Consumption Emotions," *Journal of the Academy of Marketing Science*, Vol. 25 (1997), pp. 296-304.

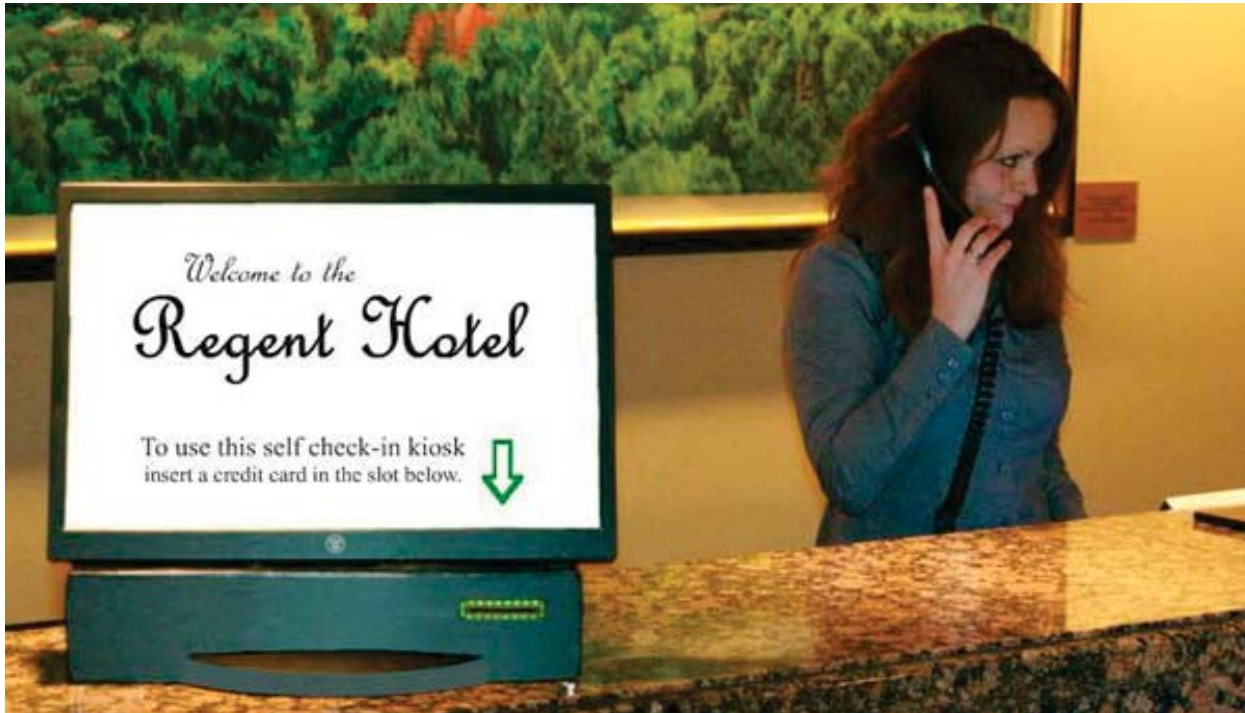
<sup>24</sup> Shirley Taylor, "Waiting for Service: The Relationship between Delays and Evaluations of Service," *Journal of Marketing*, Vol. 58, No. 2 (1994), pp. 56-69.

rated the extent to which they found the employee to be friendly, approachable, professional, and competent.

**Study 1 analysis.** Analysis of variance (ANOVA) indicated that participants assigned to the "positive employee" conditions found the employee to be significantly more friendly, approachable, professional, and competent ( $M_{\text{negative}} = 2.171$ ,  $M_{\text{positive}} = 6.116$ ,  $F(1, 139) = 606.677$ ,  $p < .001$ ). Thus, the results of this manipulation check suggested that our employee rapport-related manipulation was successful. A second manipulation check was conducted to evaluate the extent to which individuals felt that the presence of technology resulted in their over benefiting during the interaction with the front desk employee. In particular, participants were asked to indicate the extent to which "I felt like I was ignoring the front desk employee," and "I felt like I was being a bit rude to the front desk employee." Among participants who experienced a positive employee, those in the technology present condition scored significantly higher regarding these perceptions of positive inequity or over benefiting ( $M_{\text{absent}} = 2.069$ ,  $M_{\text{present}} = 4.443$ ,  $F(1, 69) = 42.987$ ,  $p < .001$ ). Even in this test scenario, participants recognized that they were unable to fulfil their social obligations to the positive employee while interacting with the self-service technology.

The results of our primary ANOVA analysis indicated that that the effect of technology on service evaluations

## Study 1: Self-service kiosk with negative employee rapport condition



...but in the negative employee rapport condition, participants in the technology present condition saw this image.

depended on whether the employee rapport building activities were positive or negative ( $F(1, 137) = 37.676, p < .001$ ). Consistent with an equity theory explanation, we found a positive effect of technology when rapport building was negative ( $M_{\text{absent}} = 2.695, M_{\text{present}} = 4.924, F(1, 137) = 39.689, p < .001$ ), and a negative effect of technology when rapport building was positive ( $M_{\text{absent}} = 7.898, M_{\text{present}} = 7.067, F(1, 137) = 5.603, p = .009$ ). Thus, when the employee was friendly, average service evaluations were lower when technology was present, but evaluations were higher when technology was paired with an unfriendly employee.

To test whether our respondents experienced anger when they felt that they were on the short end of the social exchange, we conducted a mediation test on the subset of the data where rapport building was negative. The results indicated a significant negative effect of technology on anger ( $b = -1.114, t = -2.543, p = .007$ ), meaning that the presence of technology reduced the anger experienced by the guest when the employee was not keeping up her side of the equity equation. As would be expected, there was also a negative relationship between anger and service evaluations ( $b = -.2804, t = -2.0844, p = .003$ ). A "bootstrap" analysis found that the combination of these effects represented a statistically significant mediating process, with a 90-percent

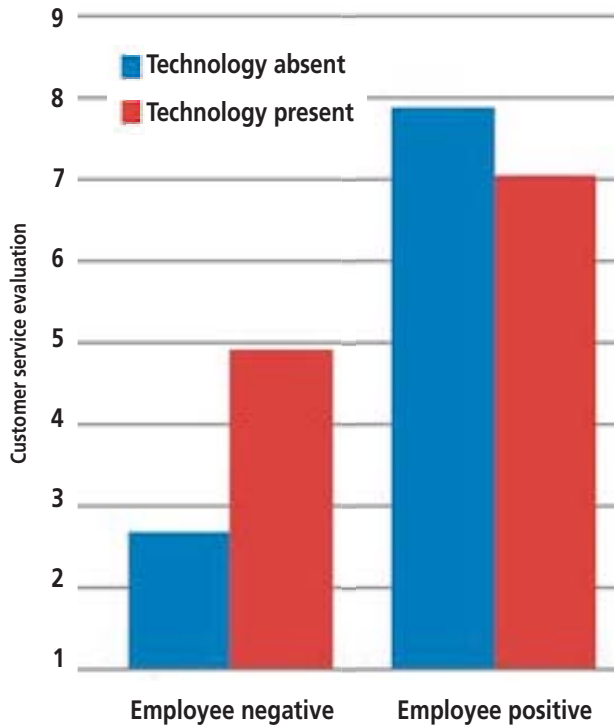
confidence interval excluding zero (.1025 to .7086).<sup>25</sup> Also consistent with an equity theory explanation, for this subset of the data there was no significant relationship between technology and psychological tension ( $b = .371, t = .926, p = .179$ ). Furthermore, a second bootstrap analysis confirmed that psychological tension was not a viable mediator for this portion of the data when the 90-percent confidence interval included zero (-.3009 to .0246). In summary, the results of the mediation analysis confirmed that when employee rapport was negative consumers' evaluations of the service encounter were influenced by anger (and not by psychological tension).

We did, however, find psychological tension, or cognitive dissonance, when the respondents felt that they overbenefitted during the social exchange. This was demonstrated by a second mediation analysis on the subset of the data where rapport building was positive. Consistent with an equity theory explanation, the analysis revealed a significant positive effect of technology on psychological tension ( $b =$

<sup>25</sup> As per the recommendation of Preacher, Rucker, and Hayes, a bootstrap test conduct an analysis by examining a series of randomly selected cases from a sample. See: Kristopher J. Preacher, Derek D. Rucker, and Andrew F. Hayes, "Addressing Moderated Mediation Hypotheses: Theory, Methods, and Prescriptions," *Multivariate Behavioral Research*, Vol. 42 (2007), pp. 185–227.

## EXHIBIT 4

### Study 1 results: Service evaluations across four experimental groups



-1.0222,  $t = -2.6331$ ,  $p = .005$ ). Similarly, there was a negative relationship between psychological tension and service evaluations ( $b = -.3643$ ,  $t = -3.9920$ ,  $p < .001$ ). The bootstrap analysis indicated that this process was statistically significant with a 90-percent bias-corrected confidence interval excluding zero (-.8157 to -.1198). When the procedure was repeated utilizing negative affect, there was no significant relationship between technology and negative affect ( $b = .2657$ ,  $t = .7143$ ,  $p = .239$ ). Last, a bootstrap analysis confirmed that negative affect was not a viable mediator, as indicated by a 90-percent bias-corrected confidence interval that included zero (-.5046 to .1466). In summary, when employee rapport building was positive, the effect of technology on service evaluations was explained by psychological tension but not by anger.

**Study 1 summary.** Study 1 replicated and extended the results of the study my colleagues and I published earlier this year, regarding the interaction of employee rapport building and self-service technology.<sup>26</sup> In particular, when an employee exhibited positive rapport-building behaviors, pairing that employee with technology decreased service evaluations.

<sup>26</sup> Giebelhausen *et al.*, *op.cit.*

However, for badly behaving employees, adding technology improved service evaluations. Consistent with an equity theory explanation, the negative effect of technology (when employees were positive) was explained by an increase in the guest's psychological tension or cognitive dissonance. Also consistent with equity theory, the positive effect of technology (when employees were negative) was explained by a reduction in guest anger.

These analyses extend the earlier study's results by highlighting how equity theory can inform best practices for pairing front-line employees with technology. No service organization wants inhospitable front-line employees, but it might be best in any event if employees are not effusively friendly when guests are expected to use self-service technology. In the more common situation of organizations that encourage positive rapport-building between customers and employees, the results suggest that employees limit their interaction with guests who are engaged with technology. One way to accomplish this would be to reduce staff levels, thus reducing overall employee-guest contact. But rather than use that undesirable approach, perhaps a better recommendation is to train front-line employees to disengage from customers when those customers are using self-service technology. Study 2 tests this recommendation of having employees present but somewhat distant, by sharing the results of a field experiment in which guests use Monscierge Connect Lobby self-service technologies in an actual hotel operation.

### Study 2: Field Experiment

The results of Study 1 are interesting in large part because they run counter to the conventional managerial wisdom that the presence of friendly, extroverted service employees always results in a better customer experience. To investigate this notion further, Study 2 tests the managerial implication found in Study 1 that frontline service employees should be present and ready to help, but that they should not attempt to interact with customers who are engaged with self-service technologies. Thus, Study 2 examined a situation where rapport building was separated from the customer's use of the technology.

**Study 2 procedure.** Our analysis of this issue involved testing guests' reactions to the "Monscierge Connect Lobby," a self-service device that features a large touch screen with which guests can find such information as hotel offerings, local restaurants, and weather information (although this device is not for checking in). For Study 2, we employed technology that had been installed in the lobby of a hotel located on the campus of a private university in the northeast United States. Well known for its excellent service, the hotel's lobby is staffed with bell stand attendants who offer guests a cordial greeting when they enter the hotel. When they are

at the stand, these employees are positioned just inside the door, where they are available to guests. The Monscierge kiosk was 25 feet from that spot.

The combination of these factors created the opportunity for a natural experiment, requiring little or no manipulation. This occurred because sometimes employees were occupied away from the bell stand when guests were using the Monscierge Connect Lobby technology (typically, assisting other guests with valet parking or luggage). At other times, an employee was at the bell stand when a guest was using the technology (but not engaging directly with those guests). Importantly, because employees are trained to greet all guests as they enter the hotel, the nearby employee had likely welcomed the guest, said hello, or offered other positive rapport building behavior. In summary, this natural experiment replicates the managerial recommendation from Study 1 consistent with a social equity process.

A banner ad inviting guests to participate in a short survey was displayed at the bottom of the Monscierge touchscreen, with the idea that guests would take the online survey on the spot. The survey asked participants to rate the information and usability of the technology. Regarding the independent or causal variable of interest, the survey then asked, “Was there a hotel staff member nearby (i.e., in your field of vision) while you were using this touchscreen?” Regarding the dependent or outcome variable of interest, the survey asked guests to indicate their overall impression of their experience while using this touchscreen. One hundred and thirty-two individuals completed all of the aforementioned measures and were included in the analysis.

**Study 2 analysis.** For this study, ANCOVA was used to test whether guests preferred interacting with the touchscreen while an employee was absent or present (while controlling for technology usability and information). The initial analysis indicated a marginally significant positive effect of bell staff presence ( $F(1,128) = 3.232, p = .075$ ), but when two outliers (two extremely aberrant responses) were removed, the effect of staff presence became statistically significant ( $F(1, 126) = 4.156, p = .044$ ). Particularly noteworthy is that the effect was in the opposite direction observed in the scenario study. That is, participants were more satisfied when there was an employee at the nearby bell stand ( $M_{\text{absent}} = 7.215$  vs.  $M_{\text{present}} = 7.523$ ). Contrary to Study 1, pairing technology with an employee who was nearby but not engaging the guest did not reduce guests’ service ratings.

**Study 2 summary.** I emphasized the position of the bell stand because it’s important to note a difference in the employee-guest interaction in Study 2, as compared to Study 1. The Monscierge kiosk was at a distance from the employee. This matter needs more consideration, given the implication from Study 1, that frontline employee should give a guest “social space” when that guest is engaged with a self-service

technology. The fact that guests rated the experience of using the technology higher when an employee was nearby is not inconsistent with the finding of a negative effect of employee rapport observed in Study 1, since the customer-employee interaction in Study 2 was markedly different.

## The Role of Technology in Customer Service

The results of these studies begin to shed light on the concept that technology creates a barrier between customers and employees—for better or worse. We see in Study 1 that when front desk staff behavior was characterized by positive rapport-building behaviors, introducing self-check-in technology resulted in reduced service evaluations. Conversely, when front desk staff behavior was unpleasant, the barrier created by the technology allowed the customer to retreat from the frosty service interaction, thus increasing service evaluations. Consistent with an equity theory explanation, the negative effect of technology when the employee was friendly was explained by an increase in guests’ psychological tension or cognitive dissonance. The theory suggests that the dissonance occurs because the technology prevented the guest from reciprocating the employee’s positive behavior. When the employee was acting improperly, on the other hand, the positive effect of technology on service evaluations was statistically explained by a reduction in feelings of anger (from being ignored or disrespected).

However, Study 2 indicates that the employee’s availability (or physical distance) changes the equation. It appears that employees can prevent equity imbalances by providing guests with “social space” while they are engaged with technology, but at the same time being available (without assertive efforts to build rapport). The results suggest that, under these circumstances, technologies such as the Monscierge Connect Lobby arguably can contribute to increasing overall service evaluations.

In summary, the implications for hospitality managers is that, while rapport building behaviors can greatly contribute to guest evaluations of the experience, employee interactions with guests should be informed by social equity theory. In general employees should be mindful of social equity while engaged with guests, to make sure that the guest is in a situation where she or he can respond in kind to an employee’s friendly overtures. This seems to mean that when guests are using technology the employee needs to give the guest psychological and even physical space. These recommendations represent a potential break with traditional ideals of guest service where assertive rapport building is often encouraged. However, in a world where technological devices are increasingly part of interpersonal communications, perhaps it is time to reconsider what it means to provide excellent guest service. ■

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