

# Journal of Service Research

<http://jsr.sagepub.com>

---

## **Consequences of Forcing Consumers to Use Technology-Based Self-Service**

Machiel J. Reinders, Pratibha A. Dabholkar and Ruud T. Frambach

*Journal of Service Research* 2008; 11; 107

DOI: 10.1177/1094670508324297

The online version of this article can be found at:  
<http://jsr.sagepub.com/cgi/content/abstract/11/2/107>

---

Published by:



<http://www.sagepublications.com>

On behalf of:

Center for Excellence in Service, University of Maryland

**Additional services and information for *Journal of Service Research* can be found at:**

**Email Alerts:** <http://jsr.sagepub.com/cgi/alerts>

**Subscriptions:** <http://jsr.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

**Citations** <http://jsr.sagepub.com/cgi/content/refs/11/2/107>

# Consequences of Forcing Consumers to Use Technology-Based Self-Service

Machiel J. Reinders

VU University Amsterdam

Pratibha A. Dabholkar

University of Tennessee

Ruud T. Frambach

VU University Amsterdam

Today, traditional full service is increasingly replaced with technology-based self-service (TBSS), sometimes with no other option for service delivery. This study develops a conceptual model to investigate the impact of forcing consumers to use TBSS. The model is tested using an experimental design within railway (ticketing and travel information) contexts. The results show that forced use leads to negative attitudes toward using the TBSS as well as toward the service provider, and it indirectly leads to adverse effects on behavioral intentions. The findings also show that offering interaction with an employee as a fall-back option offsets the negative consequences of forced use, and that previous experience with TBSS (in general) leads to more positive attitudes toward the offered self-service, which can offset the negative effects of forced use to some extent.

**Keywords:** *technology-based self-service (TBSS); forced use of self-service; perceived freedom of choice; decisional control; interaction with employees; experience with TBSS*

New technologies are radically changing the way services are organized and delivered (Meuter et al. 2005). At the same time, service companies increasingly involve active participation by customers in the service process (Bendapudi and Leone 2003). The two trends together result in service providers increasingly employing new technologies to encourage consumers to perform services by themselves (Dabholkar 2000). Technology-based self-service<sup>1</sup> (TBSS), such as touch screens in department stores and information kiosks at hotels as well as off-site options such as telephone or online banking and shopping (cf. Dabholkar 1994; Dabholkar and Bagozzi 2002), essentially replaces the interaction between employees and customers (Bitner, Brown, and Meuter 2000), and it allows companies to save costs, increase productivity, and create a more homogeneous service environment (Curran, Meuter, and Surprenant 2003; Dabholkar 1996). To maximize these advantages, firms can stimulate greater use of TBSS by making the traditional full-service encounter relatively unattractive, for instance, by charging an additional fee for the latter.

A more extreme option is to completely replace traditional service with TBSS, thus forcing customers to use

automated service. For example, a recent cover story featured by *Time* magazine suggests the end of customer service as one of 10 ideas that are changing the world (Kiviat 2007). Indeed, several firms are starting to offer only TBSS to their customers: (a) the opening of the Fresh & Easy grocery stores in the United States by Tesco (UK) using only self-service checkout lanes, (b) the building of Alaska Airlines' Airport of the Future in Seattle where self-check-in kiosks have completely replaced ticket counters, (c) the move to exclusively self-scanning in grocery stores in many small Swedish towns, and (d) the use of on-site ticketing machines as the only means for purchasing train tickets in smaller towns in the Netherlands. In all of these cases, the customer is being forced to use on-site TBSS, with no other options for service delivery. Although social psychology literature has suggested that limiting consumers' perceived freedom of choice may result in negative effects (e.g., Linder, Cooper, and Jones 1967; Zuckerman et al. 1978),

---

**Authors' Note:** We are grateful to Mark van Hagen and the Dutch Railways for their support in executing this research project.

little is known about the effects of forcing consumers to use TBSS. Yet, this is becoming a critical strategic issue for service providers.

Previous literature has extensively examined the determinants of consumer use of TBSS (e.g., Dabholkar 1996; Dabholkar and Bagozzi 2002; Meuter et al. 2000; Meuter et al. 2005), but it has not addressed the issue of forcing consumers to use self-service based on the new technologies. As an exception, Anselmsson (2001) studied a situation where self-scanning was the only service option in a grocery store in Sweden. However, the focus of his study was on the perceived quality of self-scanning; it did not compare the forced situation with others where choice was offered to the consumer, to determine the consequences of forced use. Furthermore, although some studies have examined links between perceived choice, perceived control, and affect or behavior in service situations (e.g., Hui and Bateson 1991; Ward and Barnes 2001), and other researchers have studied the role of perceived voluntariness in the use of new technologies by individuals within organizations (e.g., Agarwal and Prasad 1997; Brown et al. 2002; Moore and Benbasat 1991), a conceptual foundation and empirical test of forced use of TBSS is missing in the literature.

The main purpose of our study is to fill this gap by investigating whether forced use of TBSS has negative consequences for customers, in terms of attitudes as well as behavioral responses such as word of mouth and switching intentions. We draw on theory related to perceived control, psychological reactance, and attribution, as well as the forced adoption of innovations, to develop a conceptual model that explains the effects of forcing consumers to use TBSS, and we empirically test this model with an experimental design.

In addition, although research on TBSS acknowledges the importance of personnel-based support when introducing self-service (e.g., Anselmsson 2001; Dabholkar, Bobbitt, and Lee 2003), no study has empirically tested the effects of offering interaction with an employee as a fall-back option when introducing TBSS. Therefore, a second purpose of this study is to investigate whether offering interaction with an employee as a fall-back option might help to offset the negative consequences of forced use of TBSS.

Finally, the literature shows that consumers' previous experience with technology (or with TBSS in general) positively affects attitudes and behavior toward using new technologies or using new types of TBSS (e.g., Dabholkar 1992; Gatignon and Robertson 1991; Meuter et al. 2005). However, the effect of consumers' previous experience with technology has not been studied in a

forced-use situation. Consumers who are more experienced may be more likely to accept the forced use of TBSS as they may feel more comfortable using them. Therefore, the third purpose of our study is to extend the literature by exploring the role that consumers' previous experience plays in the forced use of TBSS.

## Conceptual Framework

### Effect of Forced Use on Attitude Toward Using the TBSS

Forcing consumers to use a TBSS reduces their freedom to choose a service-delivery mode for themselves and therefore is likely to reduce their perceptions of decisional control. Decisional control is defined as "the extent of choice on means and goals that a person has in a situation" (Averill 1973; Hui and Toffoli 2002, p. 1,827). Perceived decisional control is substantially reduced when consumers can no longer make decisions for themselves (e.g., Botti, McGill, and Iyengar 2003; Walton and Berkowitz 1985). Given that perceived control is an important aspect for customers in evaluating and using a TBSS (e.g., Bateson 1985; Dabholkar 1996; Lee and Allaway 2002), reduced levels of control, such as through forced use, are likely to have a negative effect on the evaluation of the TBSS.

In addition, previous research shows that consumers who can make their own choices are more intrinsically motivated than consumers engaging in activities without having a choice (Zuckerman et al. 1978). Research shows further that intrinsic motivations are an important predictor of attitudes toward the product or service (Barczak, Ellen, and Pilling 1997).

Moreover, threats to a person's freedom of choice result in a "motivational state directed at engaging in the threatened free behavior" according to psychological reactance theory (Clee and Wicklund 1980, p. 390). The option that is eliminated becomes more attractive, and the option that is forced upon the consumer becomes less attractive. Therefore, removing traditional full-service offerings and forcing customers to use a TBSS is likely to result in more negative evaluations of the latter.

Finally, literature on forced adoption suggests that imposing an innovation on consumers results in resistance toward that innovation (e.g. Ram and Jung 1991). This is because consumers have to change existing behaviors, they are not consulted regarding the change, and they feel they are being manipulated to adopt the innovation. As a result, they are likely to develop negative attitudes toward the innovation.

This varied theoretical background consistently suggests that forced use of a TBSS will have a negative effect on consumer attitudes toward using that TBSS, as proposed in Hypothesis 1a. As a corollary, we propose that providing consumers with increasing choice between different service modes will have a positive effect on their attitudes toward using a TBSS that is offered as one of the options (see Hypothesis 1b). Thus Hypotheses 1a and 1b are proposed:

*Hypothesis 1a:* Forced use of a TBSS (vs. giving customers a choice in service delivery options) will result in less favorable attitudes toward using the TBSS.

*Hypothesis 1b:* Greater choice among service delivery options will result in more favorable attitudes toward using the TBSS.

### Effect of Forced Use on Attitude Toward the Service Provider

Forcing consumers to use a TBSS is also likely to affect their evaluation of the service provider. In the context of restricted choice, consumers feel less responsible for their decisions (Kiesler 1971; Pritchard, Havitz, and Howard 1999). Such consumers are less committed to the behavior in question and are less likely to accept responsibility for negative outcomes (Arkin, Gleason, and Johnston 1976; Bendapudi and Leone 2003). Attribution theory suggests that if certain outcomes of an activity are viewed as beyond someone's control, failures tend to be attributed to external circumstances (Anderson 1991). As consumers "don't like to be trapped or forced into interacting with a company in only one way" (Bitner, Ostrom, and Meuter 2002, p. 105), such failures are likely to be attributed toward the provider of the service. Thus, consumers who feel forced to use a TBSS may be less likely to accept responsibility for potential negative consequences of using the TBSS and more inclined to make negative attributions about the service provider, resulting in negative attitudes toward the service provider.

Furthermore, according to psychological reactance theory, restricted freedom leads to frustration and hostile attitudes toward the source of the restriction on the consumer's freedom, in this case the service provider (Fitzsimons and Lehmann 2004). Accordingly, consumers are dissatisfied when the option to choose an alternative to which a consumer is personally committed is removed (Fitzsimons 2000), and dissatisfied consumers are likely to develop negative attitudes toward the service provider.

Different theoretical backgrounds suggest that forced use of TBSS will have a negative effect on consumer attitudes toward the service provider, as proposed in Hypothesis 2a. As a corollary, we propose that providing consumers with increasing choice between different service modes will have a positive effect on their attitudes toward the service provider (see Hypothesis 2b). Thus Hypotheses 2a and 2b are proposed:

*Hypothesis 2a:* Forced use of a TBSS (vs. giving customers a choice in service delivery options) will result in less favorable attitudes toward the service provider.

*Hypothesis 2b:* Greater choice among service delivery options will result in more favorable attitudes toward the service provider.

### Effect of Forced Use on Behavioral Intentions

In determining behavioral intentions of interest, it is noted that past research has identified word-of-mouth and switching intentions as relevant aspects of loyalty intentions in service contexts (Bitner 1990; McKee, Simmers, and Licata 2006), including the self-service context (Meuter et al. 2003). In the proposed model, we therefore focus on word-of-mouth and switching intentions as two important but opposite behavioral intentions. Switching intentions are indicative of a potential loss of customers (Keaveney 1995) and (positive) word-of-mouth intentions indicate a potential beneficial influence on other customers (Harrison-Walker 2001; McKee, Simmers, and Licata 2006).

Forced use of TBSS is expected to have an indirect negative effect on behavioral intentions through attitudes because attitudinal research indicates that attitudes have a strong, positive effect on behavioral intentions (cf. Fishbein and Ajzen 1975). The relationship between attitudes and intentions has been empirically supported in several studies in services settings (e.g., Bansal and Taylor 2002; Nysveen, Pedersen, and Thorbjørnsen 2005), including TBSS contexts (e.g., Dabholkar 1992; Dabholkar and Bagozzi 2002). As the first part of the indirect relationship is already proposed in Hypotheses 1a and 2a, we now hypothesize the second part, that is, the direct effects of attitudes on behavioral intentions:

*Hypothesis 3:* The more positive the attitude toward using the TBSS (a) the more likely that the consumer will engage in positive word of mouth and (b) the less likely that the consumer will switch to another mode of service.

*Hypothesis 4:* The more positive the attitude toward the service provider (a) the more likely that the consumer will engage in positive word of mouth and (b) the less likely that the consumer will switch to another mode of service.

### **Effect of Interaction With an Employee as a Fall-Back Option on Attitudes**

The negative effects of forced use of TBSS may be offset by offering interaction with an employee as a fall-back option when the TBSS fails or when customers need help. For instance, a fall-back option allows customers to call a help desk when experiencing problems with a Web-based interface or to ask a service employee for help in using a kiosk designed for self-service. Chang (2006) found that when customers are provided with recovery options in case of service failure, their sense of freedom of choice is partly restored due to the possibility of escaping an annoying situation. Furthermore, Dabholkar, Bobbitt, and Lee (2003) reported that consumers have a greater willingness to try a TBSS if an employee is available to show the consumer how the automated option works. Finally, Anselmsson (2001) showed that personnel-based support for the use of self-scanners has a positive effect on the perceived service quality of this option. Based on the evidence that consumers are more willing to try a TBSS given the assurance of interaction with an employee as a fall-back option, and that they perceive greater freedom of choice or higher quality in such cases, it seems reasonable to expect that the availability of interaction with an employee as a fall-back option when forced to use a TBSS will lead to more positive attitudes toward using that TBSS and toward the service provider who offers it. Hence, Hypothesis 5 is proposed:

*Hypothesis 5:* The availability of interaction with an employee as a fall-back option in the case of forced use of a TBSS will lead to (a) more positive attitudes toward using the TBSS and (b) more positive attitudes toward the service provider.

### **Effect of Consumers' Previous Experience on Attitudes**

Literature on the adoption of TBSS shows that previous experience with TBSS in general increases the likelihood of consumers trying out new TBSS options (Dabholkar 1992; Meuter et al. 2005). Furthermore, consumers who frequently use a variety of TBSS options tend to have more positive attitudes toward using TBSS in general and

toward using new TBSS options (Dabholkar 1992; Keaveney and Parthasarathy 2001). Finally, Curran, Meuter, and Surprenant (2003) suggested that consumers with greater experience in using different types of TBSS options have more positive attitudes toward service providers who offer such options. Based on this background, it is expected that consumers with greater previous experience in using TBSS (in general) will have more positive attitudes toward any offered TBSS as well as toward the service provider who offers it, and this will offset the negative consequences associated with the forced use of a TBSS. Therefore, we propose Hypothesis 6:

*Hypothesis 6:* Consumers' previous experience with using TBSS in general will lead to (a) more positive attitudes toward using a particular TBSS and (b) more positive attitudes toward the service provider of that TBSS.

A conceptual model with these six hypotheses (excluding Hypotheses 1b and 2b, which are corollaries) is shown in Figure 1. The model relates the forced use of a TBSS to attitudinal and behavioral consequences, and it also addresses the effects of interaction with an employee as a fall-back option and consumers' previous experience with TBSS in general.

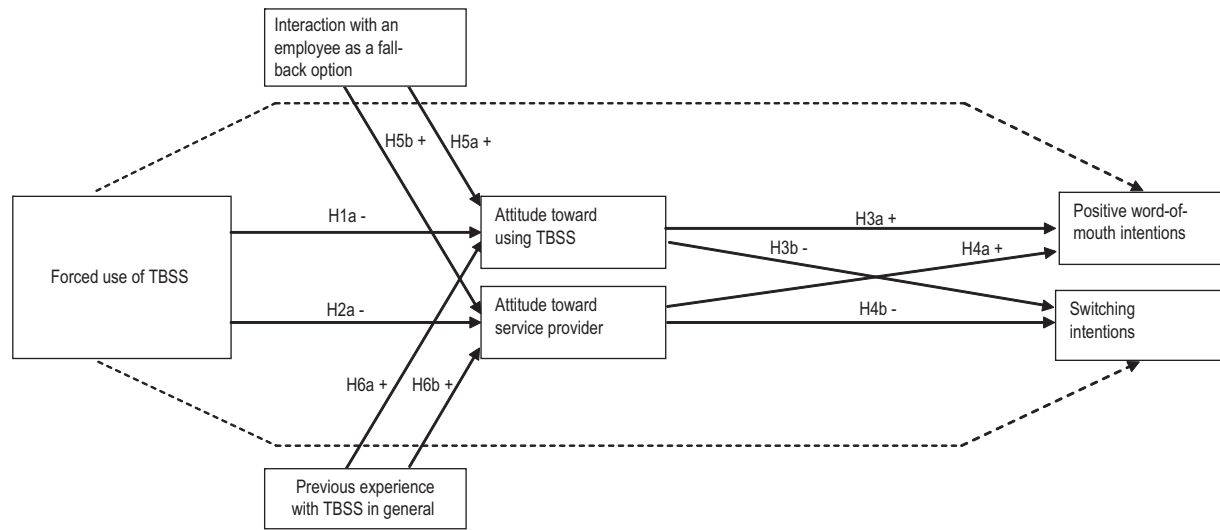
## **Method**

### **Research Context**

The empirical study was developed in cooperation with the Dutch Railways, which serve almost 60% of the population in the Netherlands. Technology-based self-service is very important in this research context as it is a major alternative to interaction with an employee for obtaining train tickets and travel information. Moreover, some railway stations in smaller towns offer no full service at all, which makes this an ideal context to study the forced-use situation.

Furthermore, as other railway stations offer the traditional full-service delivery mode for buying tickets and obtaining travel information as well as two different TBSS options—on-site and off-site—the context is appropriate for testing the corollaries to the model, that is, whether offering consumers greater choice among service options leads to increasingly positive attitudes toward the TBSS and the service provider. Finally, as the railway company offers these varied options for two different service contexts—buying a ticket and obtaining travel information—it allows us to simultaneously test

**Figure 1**  
**Conceptual Framework**



Note: The corollaries Hypotheses 1b and 2b substitute greater choice (manipulated) or perceived freedom of choice (measured) instead of forced use, changing the negative effects from this box to positive. The dotted links are not hypothesized but are tested to gauge whether the mediating effects of attitudes are full or partial. TBSS = Technology-based self-service.

the model in two contexts, thus increasing the generalizability of the study.

## Research Design

An experimental design was used over a field study to carefully control and test the effects of forced use of a TBSS as well as different levels of choice among service delivery options. Forced use was manipulated, along with limited choice and full choice among the options, by describing the different service modes that the railway company actually offers its customers, thus increasing the realism of the experiment. For buying a ticket, the company offers three different service modes: (a) traditional ticket office (full service), (b) ticketing machine (on-site TBSS), and (c) Internet (off-site TBSS). For obtaining travel information, the company also offers three different service modes: (a) traditional information desk (full service), (b) touch screen monitor (on-site TBSS), and (c) Internet (off-site TBSS). We created different treatments using these three different types of service modes that the railway company actually offers its customers and did so separately for the ticketing group and the travel-information group.

The treatments included forced use or no choice (customers could use only one TBSS mode), limited choice (customers could choose between two service modes:

either two different TBSS modes or a TBSS mode and a full-service mode), and full choice (customers could choose among all three service modes).<sup>2</sup> In addition, under the forced-use or no-choice category, different treatments were created by either offering interaction with an employee as a fall-back option or not. The entire research design with eight different treatments for both types of service groups (i.e., ticketing and travel information) is shown in Appendix 1. Subjects were randomly assigned to one of these two groups and subsequently to one treatment within the group. Cell sizes for each treatment (within each group) are also shown in Appendix 1. Sample scenarios used to create the treatments are shown in Appendix 2.

## Sample

A total of 4,000 customers, obtained from the railway company's register, were approached to participate in the study. It was important to draw from a population of people who had actually encountered the various service modes described in the scenarios, to further increase the realism of the experiment. Out of this group, 1,396 respondents answered the questionnaire, representing a response rate of almost 35%. Of these, 246 questionnaires were unusable due to missing information, resulting in a total of 1,150 usable responses.

Men (49.8%) and women (50.2%) were equally represented in the sample. The age of respondents in our sample ranged from 18 to 80 years, with approximately 40% being between 40 and 60 years. With regard to travel behavior, we found that 30% of the respondents are heavy users (they use train services more than once a week), 34% are light users (they use train services less than 11 days a year), and 36% fall in the middle category (medium users). Furthermore, we found that almost 32% of the respondents travel mainly for business reasons, whereas 51% travel mainly for leisure reasons. Finally, our sample shows that almost 14% of the respondents travel only during peak hours, whereas 44% travel only during off-peak hours, and 43% of the respondents travel in both periods.

## Measurement

A manipulation check was used to test the effectiveness of the three main treatments—forced use or no choice, limited choice, and full choice. Subjects were asked to indicate how much choice they had in the situation described in the scenario, on a 7-point semantic differential scale ranging from *no choice at all* to *full choice*, adapted from Hui and Bateson (1991).

Perceived freedom of choice was also measured (in addition to extent of choice being manipulated in the experimental design), in order to test whether the mediating effects of attitudes were full or partial. Two items were adapted from Hui and Bateson (1991) and Hui and Toffoli (2002).

Attitude toward using TBSS was measured using the four item, 7-point semantic differential scale employed by Dabholkar and Bagozzi (2002). Attitude toward service provider was measured using the three item, 7-point semantic differential scale from Day and Stafford (1997). (Positive) word-of-mouth intentions were measured with a single, 7-point item used by Meuter et al. (2003). Switching intentions (to another mode of transport) were measured by adapting one item from the scale used by Bansal, Taylor, and St. James (2005). Consumers' previous experience with TBSS in general was measured by adapting the three item, 7-point Likert scale from Meuter et al. (2005) and by drawing on Dabholkar (1992) and Meuter et al. (2003) to capture usage of different types of TBSS.

Relevant psychographic variables were included in the study as controls. Technology anxiety and inertia were adapted from Meuter et al. (2005), and need for interaction was adapted from Dabholkar (1996; Dabholkar and Bagozzi 2002).

All the measures described above are shown in Appendix 3. Cronbach's alphas for the measures ranged from .70 to .94 and are also shown in Appendix 3.

Finally, demographics (gender, age, and education) and travel behavior (frequency, time of travel, and motive for travel) were measured. This was done to create a profile of the respondents (see Sample section) and also to test these as additional control variables.

## Results

### Testing Hypotheses 1 and 2

A manipulation check for the three conditions—no choice, limited choice, and full choice—worked well for both groups, ticketing and travel information. Subjects' perceptions of the extent of choice for forced use (no choice) were lower and significantly different from having any choice, and full choice was seen as greater than limited choice. As seen in Table 1, the means for buying a ticket were  $M_{\text{no choice}} = 2.49$ ,  $M_{\text{limited choice}} = 3.96$ ,  $M_{\text{full choice}} = 5.76$ ;  $F(2, 561) = 165.75$ ,  $p < .001$ . The means for obtaining travel information were  $M_{\text{no choice}} = 2.83$ ,  $M_{\text{limited choice}} = 4.89$ ,  $M_{\text{full choice}} = 5.31$ ;  $F(2, 583) = 163.44$ ,  $p < .001$ . Games-Howell post hoc tests revealed significant differences between all three means for both contexts.

Next, analysis of variance was used to test the effect of forced use as well as of increasing (or greater) choice on attitudes. The results are reported in Table 1 as well as shown graphically in Figure 2. As seen from Table 1, the means for attitude toward using TBSS and attitude toward the service provider increase in the correct direction across the three conditions for both groups (ticketing and travel information). Moreover, the means are significantly different for the forced-use or no-choice condition versus the other two conditions, for both types of attitudes and both service contexts. Thus, Hypotheses 1a and 2a are supported unequivocally. However, the means for limited choice and full choice are only significantly different for attitude toward the service provider in the case of ticketing. Therefore, corollary Hypothesis 1b is not supported, and corollary Hypothesis 2b is supported only for the ticketing context. Additional analysis showed no variation in the results if limited choice was offered through multiple TBSS options or with a combination of TBSS and interaction with an employee.

The effects of forced use on attitudes are not only consistent over the two groups (ticketing and travel information) but are also robust over the two types of TBSS (on-site and off-site options). Thus, there is

**Table 1**  
**Effect of Forced Use and Greater Choice on Attitudinal and Behavioral Consequences**

	Condition			F-Value	Conclusion
	No Choice	Limited Choice	Full Choice		
Ticketing group	( <i>n</i> = 255)	( <i>n</i> = 220)	( <i>n</i> = 89)		
Manipulation check (for extent of choice)	<i>M</i> = 2.49 <sup>a</sup> <i>SD</i> = 1.508	<i>M</i> = 3.96 <sup>b</sup> <i>SD</i> = 1.660	<i>M</i> = 5.76 <sup>c</sup> <i>SD</i> = 1.108	165.75*	Manipulation worked
Attitude toward using TBSS	<i>M</i> = 2.67 <sup>a</sup> <i>SD</i> = 0.960	<i>M</i> = 3.55 <sup>b</sup> <i>SD</i> = 0.846	<i>M</i> = 3.78 <sup>b</sup> <i>SD</i> = 0.796	75.53*	Hypothesis 1a is supported
Attitude toward service provider	<i>M</i> = 3.14 <sup>a</sup> <i>SD</i> = 1.344	<i>M</i> = 4.36 <sup>b</sup> <i>SD</i> = 1.396	<i>M</i> = 5.04 <sup>c</sup> <i>SD</i> = 0.933	90.77*	Hypothesis 2a is supported
WOM intentions	<i>M</i> = 3.12 <sup>a</sup> <i>SD</i> = 1.654	<i>M</i> = 4.20 <sup>b</sup> <i>SD</i> = 1.664	<i>M</i> = 4.98 <sup>c</sup> <i>SD</i> = 1.382	52.70*	
Switching intentions	<i>M</i> = 3.99 <sup>a</sup> <i>SD</i> = 1.907	<i>M</i> = 2.59 <sup>b</sup> <i>SD</i> = 1.513	<i>M</i> = 2.52 <sup>b</sup> <i>SD</i> = 1.374	49.90*	
Travel-information group	( <i>n</i> = 308)	( <i>n</i> = 200)	( <i>n</i> = 78)		
Manipulation check (for extent of choice)	<i>M</i> = 2.83 <sup>a</sup> <i>SD</i> = 1.665	<i>M</i> = 4.89 <sup>b</sup> <i>SD</i> = 1.215	<i>M</i> = 5.31 <sup>c</sup> <i>SD</i> = 1.177	163.44*	Manipulation worked
Attitude toward using TBSS	<i>M</i> = 2.80 <sup>a</sup> <i>SD</i> = 0.977	<i>M</i> = 3.58 <sup>b</sup> <i>SD</i> = 0.762	<i>M</i> = 3.65 <sup>b</sup> <i>SD</i> = 0.686	60.71*	Hypothesis 1a is supported
Attitude toward service provider	<i>M</i> = 3.57 <sup>a</sup> <i>SD</i> = 1.366	<i>M</i> = 4.79 <sup>b</sup> <i>SD</i> = 0.997	<i>M</i> = 5.09 <sup>b</sup> <i>SD</i> = 0.966	87.36*	Hypothesis 2a is supported
WOM intentions	<i>M</i> = 3.35 <sup>a</sup> <i>SD</i> = 1.683	<i>M</i> = 4.70 <sup>b</sup> <i>SD</i> = 1.356	<i>M</i> = 4.81 <sup>b</sup> <i>SD</i> = 1.378	61.11*	
Switching intentions	<i>M</i> = 3.11 <sup>a</sup> <i>SD</i> = 1.736	<i>M</i> = 2.59 <sup>b</sup> <i>SD</i> = 1.335	<i>M</i> = 2.29 <sup>b</sup> <i>SD</i> = 1.406	11.79*	

Note: \*Significant at  $p < .01$ . Means with a different superscript indicate a significant difference ( $p < .05$ ). Means are compared two at a time. Variables are measured on a scale ranging from 1 to 7. WOM = Word of mouth; TBSS = technology-based self-service.

strong support suggesting that forcing consumers to use TBSS leads to unfavorable attitudes toward using the TBSS and toward the provider.

Although not explicitly hypothesized, we tested and found negative consequences of forced use (and positive consequences of greater choice) on word-of-mouth and switching intentions (see Table 1 and Figure 2). Mediation tests were performed (discussed later) to verify if these effects were direct or indirect.

### Testing Hypotheses 3 and 4

Multiple regression analysis was used to test the effect of attitudes on behavioral intentions. The results (see Table 2) show that attitudes toward using TBSS and attitudes toward the service provider have positive effects on word-of-mouth intentions and negative effects on switching intentions, thus supporting Hypotheses 3a-b and 4a-b for both service contexts (ticketing and travel information). The effect size for attitude toward the service provider was much larger than for attitude toward using TBSS, across both types of intentions and for both contexts.

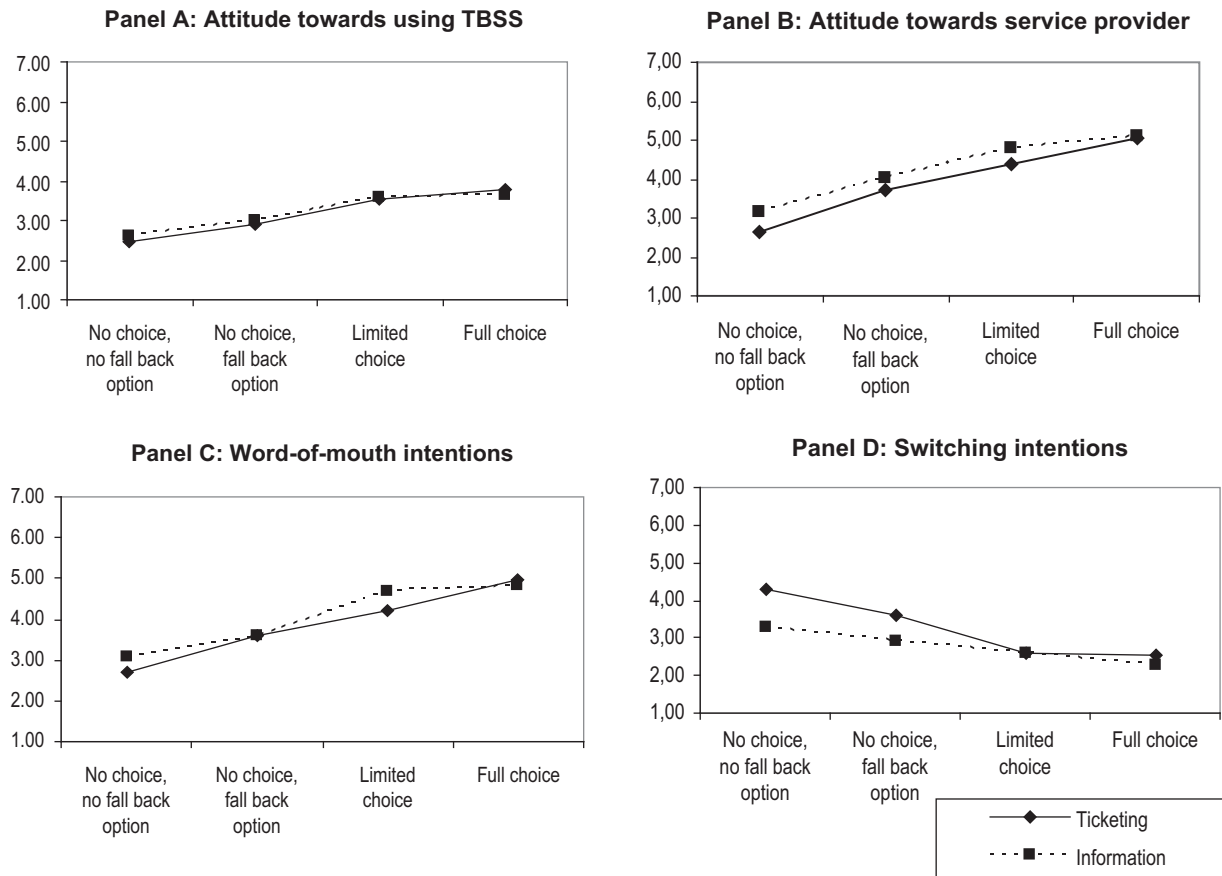
### Tests for Mediation

To test for the mediating effect of attitudes in the model, we used the two-item measure of perceived freedom of choice and the approach proposed by Baron and Kenny (1986). It was already seen that both types of attitudes significantly affected both types of intentions (see support for Hypotheses 3 and 4 above). Additionally, Table 2 shows that perceived freedom of choice, as the only independent variable, had a significant positive effect on word of mouth and a significant negative effect on switching intentions for both contexts. Thus, it matched the experimental effects of forced use (and greater choice) on intentions shown in Table 1 and Figure 2 earlier.

However, the effect of perceived freedom of choice on word-of-mouth intentions was substantially weakened when it was regressed simultaneously with attitudes, and the effect on switching intentions disappeared completely (see Table 2). Thus, we conclude that attitudes partially mediate the relationship between perceived freedom of choice and word-of-mouth intentions and fully mediate the relationship between perceived freedom of choice and switching intentions.



**Figure 2**  
Main Effects of Forced Use and Greater Choice



Note: Figure 2 combines the results of Tables 1 and 3 to depict four conditions of increasing choice for consumers.

### Testing Hypothesis 5

A manipulation check indicated that the two conditions, with and without interaction with an employee as a fall-back option, were significantly different in subjects' perceptions of extent of choice, for both the ticketing and travel information contexts. As seen in Table 3, subjects perceived greater choice when a fall-back option was available than when it was not ( $M_{no\ fall-back} = 2.17$ ,  $M_{fall-back} = 2.88$ ;  $t = 3.820$ ,  $p < .001$  for the ticketing group and  $M_{no\ fall-back} = 2.50$ ,  $M_{fall-back} = 3.18$ ;  $t = 3.654$ ,  $p < .001$  for the travel-information group).

Next, more  $t$  tests were conducted for the effect of offering interaction with an employee as a fall-back option on attitudinal outcomes (see Table 3). The  $t$  tests revealed significantly higher means for the condition with a fall-back option (vs. without a fall-back option) for attitude

toward using the TBSS as well as for attitude toward the service provider, and this was true for both contexts. Thus, Hypotheses 5a and 5b were strongly supported.

### Testing Hypothesis 6

A median split divided the sample into low versus high experience in using TBSS in general. As before,  $t$  tests were conducted to check for differences in means for the attitudinal outcomes (see Table 4). The  $t$  tests revealed significantly higher means for subjects with greater previous experience for attitude toward using the TBSS, and this was true for both contexts, thus supporting Hypothesis 6a. Although the means for attitude toward the service provider were also in the correct direction, they were not significantly different for low versus high experience, thus failing to support Hypothesis 6b for both contexts.

**Table 2**  
**Results of Regression Analyses and Mediation Tests**

Dependent Variables	Independent Variables			$R^2$	Conclusion
	Perceived Freedom of Choice (PFOC)	Attitude Toward Using TBSS	Attitude Toward Service Provider		
Ticketing group ( $n = 564$ )					
Word-of-mouth intentions					
Effect of attitudes	—	.109***	.658***	.535	Hypotheses 3a and 3b are supported
Effect of PFOC	.533***	—	—	.284	
Simultaneous effects	.089**	.079**	.625***	.549	
Switching intentions					
Effect of attitudes	—	-.213***	-.400***	.311	Hypotheses 4a and 4b are supported
Effect of PFOC	-.400***	—	—	.160	
Simultaneous effects	-.033	-.206***	-.386***	.318	
Travel-information group ( $n = 586$ )					
Word-of-mouth intentions					
Effect of attitudes	—	.138***	.642***	.550	Hypotheses 3a and 3b are supported
Effect of PFOC	.560***	—	—	.314	
Simultaneous effects	.085**	.131***	.591***	.560	
Switching intentions					
Effect of attitudes	—	-.101*	-.289***	.131	Hypotheses 4a and 4b are supported
Effect of PFOC	-.276***	—	—	.076	
Simultaneous effects	-.038	-.104*	-.265***	.138	

Note: Standardized  $\beta$  coefficients are reported, \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .01$ . Variables are measured on a scale ranging from 1 to 7. PFOC = Perceived freedom of choice; TBSS = technology-based self-service.

**Table 3**  
**Effect of Fall-Back Option on Attitudinal Consequences**

	Condition		$t$ -Value	Conclusion
	No Choice, No Fall-Back Option	No Choice, Fall-Back Option		
Ticketing group				
Manipulation check (for providing a fall-back option)	( $n = 141$ ) $M = 2.17$ $SD = 1.434$	( $n = 114$ ) $M = 2.88$ $SD = 1.512$	3.820**	Manipulation worked
Attitude toward using TBSS	$M = 2.48$ $SD = 0.934$	$M = 2.89$ $SD = 0.946$	3.383*	Hypothesis 5a is supported
Attitude toward service provider	$M = 2.66$ $SD = 1.186$	$M = 3.73$ $SD = 1.294$	6.890**	Hypothesis 5b is supported
Travel-information group				
Manipulation check (for providing a fall-back option)	( $n = 158$ ) $M = 2.50$ $SD = 1.551$	( $n = 150$ ) $M = 3.18$ $SD = 1.715$	3.654**	Manipulation worked
Attitude toward using TBSS	$M = 2.59$ $SD = 0.925$	$M = 3.01$ $SD = 0.987$	3.830**	Hypothesis 5a is supported
Attitude toward service provider	$M = 3.15$ $SD = 1.281$	$M = 4.02$ $SD = 1.312$	5.896**	Hypothesis 5b is supported

Note: Variables are measured on a scale ranging from 1 to 7. TBSS = technology-based self-service.

\* $p < .01$ . \*\* $p < .001$ .

**Table 4**  
**Effect of Previous Experience With TBSS on Attitudinal Consequences**

	Low Previous Experience	High Previous Experience	<i>t</i> -Value	Conclusion
Ticketing group	( <i>n</i> = 272)	( <i>n</i> = 280)		
Attitude toward using TBSS	<i>M</i> = 3.08 <i>SD</i> = 1.011	<i>M</i> = 3.28 <i>SD</i> = 0.987	2.369*	Hypothesis 6a is supported
Attitude toward service provider	<i>M</i> = 3.88 <i>SD</i> = 1.474	<i>M</i> = 3.91 <i>SD</i> = 1.524	0.236	Hypothesis 6b is not supported
Travel-information group	( <i>n</i> = 272)	( <i>n</i> = 306)		
Attitude toward using TBSS	<i>M</i> = 3.07 <i>SD</i> = 0.915	<i>M</i> = 3.27 <i>SD</i> = 0.979	2.538*	Hypothesis 6a is supported
Attitude toward service provider	<i>M</i> = 4.16 <i>SD</i> = 1.324	<i>M</i> = 4.22 <i>SD</i> = 1.405	0.487	Hypothesis 6b is not supported

Note: Variables are measured on a scale ranging from 1 to 7. TBSS = technology-based self-service.

\* $p < .05$ .

### Testing Control Variables

The psychographic variables identified in the literature (i.e., need for interaction, inertia, and technology anxiety) were tested as control variables. In the ticketing group, there was a significant direct, negative effect of need for interaction on attitude toward using the TBSS ( $\beta = -.103, p < .05$ ). Significant negative effects of inertia on attitude toward using the TBSS were found for the ticketing group as well as for the travel-information group ( $\beta = -.210, p < .001$  and  $\beta = -.114, p < .05$ , respectively). Furthermore, in both groups, a direct, negative effect of inertia was found on attitude toward the service provider ( $\beta = -.295, p < .001$  and  $\beta = -.194, p < .001$ , respectively). No effects of technology anxiety were found for the ticketing or travel-information group. Interaction effects between each psychographic variable and extent of choice were tested using two-way analysis of variance (ANOVAs), but no significant interaction effects were found.

We also tested demographic variables (gender, age, and education) as controls. In the ticketing group, men were slightly more positive toward the service provider than women ( $M_{\text{men}} = 4.06, M_{\text{women}} = 3.78; p < .05$ ), but no direct effects of age or education were found. No direct effects of any demographics were found for the travel-information group. The only significant interaction effect with demographics was in the ticketing group, between the extent of choice and gender on attitude toward using the TBSS. The effect of extent of choice was a bit more pronounced for women ( $M_{\text{no choice, no fall-back}} = 2.32, M_{\text{no choice, fall-back}} = 2.99, M_{\text{limited choice}} = 3.56, M_{\text{full choice}} = 3.99$  for women and  $M_{\text{no choice, no fall-back}} = 2.69, M_{\text{no choice, fall-back}} = 2.74, M_{\text{limited choice}} = 3.54, M_{\text{full choice}} = 3.61$  for men;  $F(3, 533) = 3.875, p < .05$ ).

Finally, we checked the travel behavior of the respondents (travel frequency, travel time, and travel motive) as control variables. The only direct effect was that for both groups (ticketing and travel information), infrequent (or light) travelers had higher switching intentions than frequent (medium or heavy) travelers ( $M_{\text{heavy}} = 3.16, M_{\text{medium}} = 2.95, M_{\text{light}} = 3.51; F(2, 561) = 4.723, p < .05$  for ticketing and  $M_{\text{heavy}} = 2.71, M_{\text{medium}} = 2.65, M_{\text{light}} = 3.11; F(2, 583) = 4.834, p < .05$  for travel information). No interaction effects were found between the travel behavior variables and the extent of choice.

## Discussion

### Theoretical Implications

The literature has typically examined the introduction of TBSS options within a voluntary context and focused on drivers of the acceptance of such service modes versus full service. Yet, companies are increasingly replacing traditional full-service modes with some form of TBSS, but no study to date has examined the effects of forcing consumers to use TBSS.

Our study found that forcing consumers to use TBSS has severe, adverse effects on attitudes toward using the TBSS and toward the service provider. Thus, despite all the benefits of using a TBSS that have been identified in the literature (such as ease of use, fun, convenience, reliability, and so on), the negative attitudes toward using TBSS, when forced to use it, is likely to move consumers away from using the TBSS (and to stimulate others to do so as well).

Our extended framework (i.e., the corollaries), which proposed increasingly positive attitudes with greater choice

among service delivery options, was not as strongly supported as the negative consequences of forced use of self-service. It is possible that consumers do not necessarily want a whole range of choices when it comes to service delivery, so the additional options did not appear as a significant benefit. All they seem to want is *some* choice. It is only when consumers are forced versus given a choice in using service delivery modes that the negative effects of lack of choice are seen. In fact, our analysis showed that even when choice was between two modes of TBSS, customers preferred that to being forced to use a single mode of TBSS. Our study thus extends previous literature within social psychology (e.g., Linder, Cooper, and Jones 1967; Zuckerman et al. 1978) and marketing (e.g., Hui and Bateson 1991) that focused on the positive consequences of choice. Our findings show that having no choice adversely affects attitudinal and behavioral consequences, but that offering an increasing number of choice options does not linearly contribute to more positive attitudes and behavioral intentions.

Specifically, our results showed that the negative attitudes resulting from forced use of TBSS are translated into reduced (positive) word-of-mouth intentions and increased switching intentions. The effect of attitude toward the service provider was much stronger than that of attitude toward using the TBSS, which was understandable given that our behavioral intentions were more closely related to the provider. Thus, forced use of TBSS can result in increased negative word of mouth about the service provider and a loss of customers to a competing provider. These findings add new insights to the extant literature on TBSS as well as to the literature on switching behavior.

Another theoretical contribution is that all of these effects were robust for two different service contexts (i.e., buying a ticket and obtaining travel information) and for both the on-site TBSS options (ticketing machine and touch screen monitor) and the off-site TBSS option (Internet). Thus, our model has some generalizability across different service and TBSS contexts.

Our study also found that the negative effects of forced use of TBSS are reduced by offering interaction with an employee as a fall-back option. The idea of possible "escape" in a situation of forced use might create a feeling of control. This is in line with literature that has identified the offer of recovery as having a buffering effect on the negative impact of service failure due to a sense of increased control (e.g., Chang 2006; Cranage and Sujan 2004).

In addition, consumers who had previous experience with TBSS in general were found to have less negative attitudes toward using the TBSS. This finding supports previous literature on consumers' experience with using TBSS in

general and extends it to the forced-use situation. In addition, it was interesting that previous experience helps to establish a more positive attitude toward using the TBSS, but it does not lead to a more positive attitude toward the service provider. An explanation might be that, regardless of previous experience, customers evaluate a service provider in terms of their total service offerings. For example, Montoya-Weiss, Voss, and Grewal (2003) found that online and traditional channels have complementary effects in determining customers' overall satisfaction with the service provider. Similarly, even when a TBSS is evaluated positively, satisfaction with the service provider may also be determined by whether customers can choose between the TBSS and a traditional service encounter.

The direct effects of psychographic control variables found in this study extend previous literature to the forced-use situation. We found negative direct effects of the need for interaction on attitude toward using TBSS (e.g., Dabholkar 1996) and negative direct effects of inertia on both attitude toward using TBSS and attitude toward service provider, which is related to the finding that inertia leads to hesitancy in trying new service delivery options (Meuter et al. 2005) and thus may result in more negative attitudes.

Finally, our study showed that men were more favorable toward forced TBSS than were women and, in addition, women preferred to have a greater choice of alternatives when TBSS was offered. These findings extend past literature that suggests that men tend to adopt innovations faster than women (e.g., Gatignon and Robertson 1991). Our study shows that this gender difference is supported even in the forced use of TBSS.

## Practical Implications

The results of our study have obvious practical implications for service providers who want to replace traditional full-service modes with TBSS. With forced use, consumers apparently feel frustrated about not having any choice and develop negative attitudes toward using the TBSS and toward the service provider. Moreover, these negative attitudes lead to adverse behavioral intentions related to switching to other providers or spreading negative word of mouth. To avoid these negative repercussions, service providers need to carefully consider whether forced use of a TBSS option is warranted.

Our study further suggests that it is not necessary to offer a whole range of choices of service delivery options as the benefits may be incremental. Even when the limited-choice scenario in our study included choice between two types of TBSS (and no option to use traditional full service), customers preferred having a choice to a forced-use situation. Thus, the implication

for practitioners is *not* to force consumers to use only one type of TBSS with no other choice of service delivery.

In the European railway context, where forced use of on-site TBSS is underway, imposing ticketing machines or other TBSS modes on customers as the sole service delivery option might discourage them from using railways as a means of travel altogether. Railway companies should therefore offer some choice, whether between alternative TBSS modes (e.g., ticketing machine as well as online ticketing) or between a TBSS mode and a traditional full-service encounter at railway stations. Also, in switching to unmanned railway stations with only ticketing kiosks available, they should offer an on-site fall-back option, where customers who need help can interact with service employees by telephone.

Similar implications also hold for other on-site contexts where traditional full-service encounters are being fully replaced by TBSS (see examples in Introduction section). In such cases, alternative off-site TBSS modes such as online grocery shopping or online check-in for travel should be encouraged, and on-site fall-back options should be available so that customers can avail of employee help in person or by telephone if needed.

Online service providers might face similar problems as in the off-line forced use of TBSS. Especially in relatively complex services, such as home mortgages, where previous research has shown that even online customers have a strong preference for interaction with an employee when purchasing a service (Frambach, Roest, and Krishnan 2007), caution is required when forcing customers to use only the online mode without the possibility of some type of interaction with an employee.

In situations where forcing the use of a TBSS is the best option for a provider, our study suggests possible strategies the provider could use to mitigate the negative consequences. First, as discussed above, the provider could offer interaction with an employee as a fall-back option. Our study shows that this type of fall-back option creates a sense of greater choice and leads to more favorable attitudes. The service provider could set up a fall-back option to be used in case of emergencies such as machine failure. A feature on TBSS machines could allow customers to interact with a service employee if needed. Taking it a step further, the service employee could take over the task and complete it if the customer cannot. The downside for the company would be if too many customers automatically start using the interaction feature to get the employee to provide the service. Hence, this possibility should only be available if the machine fails. Alternatively, the customer could be free to call on the employee at any time but, in case the machine is functioning, the employee should not complete the task;

instead, the employee should “walk” the customers through the task to help them learn to use the technology.

Another approach is where the service provider could decide to target the forced use of TBSS to those customers with considerable experience in using TBSS in general, to partly offset the negative consequences of forced use. However, our study suggests that even such customers will not be inclined to view the provider favorably, so this is not entirely a risk-free proposition. Moreover, if customers with limited or no experience in using TBSS in general represent a large portion of the market, the provider should offer alternative service delivery modes to minimize negative consequences.

Finally, our study shows that switching intentions were higher for infrequent users of the service. This is in accordance with the literature on switching behavior where more intensive users of the service had lower switching intentions (Keaveney and Parthasarathy 2001), due either to sunk costs related to the customer’s investment in time and emotions to build a relationship with the service provider or to the fact that frequent users of the service have no attractive alternatives (Bansal, Taylor, and James 2005; Patterson and Smith 2003). This is an encouraging finding in that customers who are frequent users of the service may not switch so easily with the forced use of TBSS. At the same time, it may be worthwhile for service firms to also prevent infrequent customers from switching, especially if they represent a large segment for the company. In this case, special attention should be paid to the concerns of infrequent customers when introducing the forced use of TBSS.

## Limitations and Future Research

Our study shows very promising results with respect to the implications of forced use of TBSS, but it represents an initial attempt to investigate the phenomenon. Although we included multiple types of TBSS options as well as two different service contexts (ticketing and travel information), the study was restricted to a public transport service within a single country. Future research could test our model in a variety of contexts and even in cross-national settings, thus further increasing the generalizability of the results presented here.

We used single item measures for word-of-mouth and switching intentions, which did not allow us to check the reliability of these measures. The decision to use single items in these cases was driven by the use of single-item measures in previous studies (e.g., Bitner 1990; Meuter et al. 2003) and a concern for reducing questionnaire length. However, future research on the topic should use multi-item measures for all constructs if possible.

Given our focus on forced use, we examined demographic and other variables as controls. Future studies could build these variables into the model itself, if there is theoretical justification. In addition, future studies could elaborate on the potential influence of personal characteristics, such as the drivers and inhibitors of technology readiness, i.e., optimism, innovativeness, discomfort, and insecurity (Parasuraman 2000).

Our study could also be extended by investigating negative attributions toward the service company (as a result of forced use) or spill-over effects to other services that the service company offers (e.g., Bitner 1990; Hess, Ganesan, and Klein 2003). In addition, other types of consumer reactions are worth studying, such as seeking redress from the service company (e.g., Zeithaml, Berry, and Parasuraman 1996), or even more extreme behavior, such as boycotting the service company (e.g., Klein, Smith, and John 2004).

Future studies could test the boundaries of forcing consumers to use a TBSS. In this study, we considered the situation in which other options truly were not available. Future

research might explore the effects of other forms of forcing customers to use TBSS, such as by decreasing the attractiveness of traditional service delivery modes. For example, introducing fees could make full-service options less attractive or even highly undesirable. In contrast, in line with reactance theory, the traditional full service may become more attractive when consumers feel forced to use a TBSS, causing consumers to switch to those companies that still offer full-service options. Future studies could verify if this is so. Furthermore, future research could explore whether adding interaction with an employee as a fall-back option enhances the perceived service quality of the forced TBSS, and to what extent it actually helps inexperienced customers in learning to use the technology.

Finally, future research can explore the forced use of TBSS in online contexts. Such research could investigate differences across online service contexts with varying degrees of complexity and test whether instant interaction with an employee (e.g., online chat) offered as a fall-back option enhances consumer attitudes and behavior.

## Appendix 1 Research Design

Treatment	Level of Choice	Ticketing Group ( <i>n</i> = 564)	Travel-Information Group ( <i>n</i> = 586)
Treatment 1	No choice	Only possible to use the ticketing machine, no fall-back option. ( <i>n</i> = 72)	Only possible to use touch screen monitor, no fall-back option. ( <i>n</i> = 88)
Treatment 2	No choice	Only possible to use the Internet, no fall-back option. ( <i>n</i> = 69)	Only possible to use the Internet, no fall-back option. ( <i>n</i> = 70)
Treatment 3	No choice	Only possible to use the ticketing machine, fall-back option provided. ( <i>n</i> = 56)	Only possible to use touch screen monitor, fall-back option provided. ( <i>n</i> = 76)
Treatment 4	No choice	Only possible to use the Internet, fall-back option provided. ( <i>n</i> = 58)	Only possible to use the Internet, fall-back option provided. ( <i>n</i> = 74)
Treatment 5	Limited choice	Choice between ticketing machine and traditional ticket office. ( <i>n</i> = 78)	Choice between touch screen monitor and traditional information desk. ( <i>n</i> = 62)
Treatment 6	Limited choice	Choice between ticketing machine and Internet. ( <i>n</i> = 73)	Choice between touch screen monitor and Internet. ( <i>n</i> = 68)
Treatment 7	Limited choice	Choice between Internet and traditional ticket office. ( <i>n</i> = 69)	Choice between Internet and traditional information desk. ( <i>n</i> = 70)
Treatment 8	Full choice	Full choice between ticketing machine, Internet, and traditional ticket information office. ( <i>n</i> = 89)	Full choice between touch screen monitor, Internet, and traditional desk. ( <i>n</i> = 78)

Note: No choice = forced use.

## Appendix 2 Sample Scenarios

### Treatment 1 (Ticketing Group)

Imagine that you have planned to travel by train, and you want to buy a ticket at the railway station. When arriving at the station, you see that there are only ticketing machines available. There is no traditional ticket office where you can buy your tickets. When the ticketing machine is out of order or when you need some help in using the ticket machine, there is no possibility to call a service desk or approach someone at the railway station.

*(continued)*

## Appendix 2 (continued)

### Treatment 8 (Travel-Information Group)

Imagine that you have planned to travel by train and want to get updated information about your journey. There are several possibilities to obtain this travel information. First, you can make use of several touch screen monitors that are available at the railway station. These touch screen monitors are interactive monitors that allow you to request travel information by entering your journey (departure and destination). In addition, it is possible to get the same travel information when using the railway company's Web site. This Web site can also be accessed by using the Internet through your mobile phone or personal digital assistant (PDA). Finally, it is possible to go to a traditional information desk, with service employees who are willing to answer your question.

## Appendix 3 Measurement Scales

Construct: manipulation check

Source: adapted from Hui and Bateson (1991)

1. How much choice do you think you have in this situation in using the self-service option?  
(measured on a 7-point scale ranging from *no choice at all* to *full choice*.)

Construct: perceived freedom of choice

Source: adapted from Hui and Bateson (1991) and Hui and Toffoli (2002)

1. In this situation, I feel forced to use the self-service option (R).
2. In this situation, I can choose between several options to order the [service].  
(measured on 7-point scales ranging from *not agree* to *totally agree*;  $\alpha = .70$ .)

Construct: attitude toward using TBSS

Source: Dabholkar and Bagozzi (2002)

Given the scenario, how would you describe your feelings with regard to using the self-service?

1. Good-bad
2. Pleasant-unpleasant
3. Harmful-beneficial (R)
4. Favorable-unfavorable

(measured using a 7-point scale;  $\alpha = .94$ .)

Construct: attitude toward service provider

Source: Day and Stafford (1997)

Given the scenario, how would you describe your feelings with regard to the service provider?

1. Good-bad
2. Positive-negative
3. Favorable-unfavorable

(measured on a 7-point scale;  $\alpha = .90$ .)

Construct: word-of-mouth intentions

Source: Meuter et al. (2003)

Given the scenario, how likely is it that you would participate in positive word-of-mouth?

1. I definitely will not—I definitely will  
(measured on a 7-point scale.)

Construct: switching intentions

Source: Bansal, Taylor, and James (2005)

Given the scenario, rate the probability that you would switch to another mode of transport.

1. No chance—certain  
(measured on a 7-point scale.)

Construct: consumers' previous experience with TBSS in general

Source: Dabholkar (1992), Meuter et al. (2003), and Meuter et al. (2005)

1. I commonly use many computers.
2. I do not have much experience using the Internet (R).
3. I use a lot of technologically based products and services.  
(measured on 7-point Likert scales.)

In addition, respondents were asked to describe how often they use each of the self-service options provided in a list that reflects a cross section of different TBSS modes (i.e., phone based, computer based, etc.). Potential responses were: never use, use infrequently, use occasionally, and use regularly. ( $\alpha = .72$ , based on combining both sets of items.)

*(continued)*

### Appendix 3 (continued)

Control variable: technology anxiety

Source: Meuter et al. (2005)

1. I feel apprehensive about using technology.
  2. Technical terms sound like confusing jargon to me.
  3. I have avoided technology unfamiliar to me.
  4. I hesitate to use most forms of technology for fear of making mistakes I cannot correct.
- (measured on a 7-point Likert scale;  $\alpha = .90$ .)

Control variable: inertia

Source: adapted from Meuter et al. (2005)

1. Changing [the service delivery mode of buying a train ticket] would be a bother.
  2. For me, the cost in time, effort, and grief to switch [the service delivery mode of buying a train ticket] is high.
  3. It's just not worth the hassle for me to switch [the service delivery mode of buying a train ticket].
- (measured on a 7-point Likert scale;  $\alpha = .86$ .)

Control variable: need for interaction

Source: Dabholkar (1996)

1. Human contact makes the process enjoyable for the customer.
  2. I like interacting WITH the person who provides the service.
  3. Personal attention by the service employee is not very important to me (R).
  4. It bothers me to use a machine when I could talk with a person instead.
- (measured on a 7-point Likert scale;  $\alpha = .92$ .)

Note: (R) = Reversed coded items;  $\alpha$  = Cronbach's alpha; TBSS = technology-based self-service.

### Notes

1. *Technology-based self-service* (TBSS) is a more accurate term than self-service technology (SST) for most of this literature because the majority of studies examine different types of self-service based on technology (i.e., TBSS) and not the technologies themselves (i.e., SSTs). In other words, this stream of research does not typically look at kiosk technology versus scanner technology, for example, but at the self-service that is made possible by a variety of technologies.

2. We included choice between two TBSS modes as part of the limited choice option so that our research design was not merely a test of using TBSS versus full service. If having a choice between two TBSS modes was seen as better than being forced to use a particular TBSS mode, it would widen the implications of the study for practitioners (as our results did confirm).

### References

- Agarwal, Ritu and Jayesh Prasad (1997), "The Role of Innovation Characteristics and Perceived Voluntariness in the Acceptance of Information Technologies," *Decision Sciences*, 28 (3), 557-582.
- Anderson, Craig A. (1991), "How People Think about Causes: Examination of the Typical Phenomenal Organization of Attributions for Success and Failure," *Social Cognition*, 9, 295-329.
- Anselmsson, Johan (2001), "Customer-Perceived Service Quality and Technology-Based Self-Service," doctoral dissertation, Institute of Economic Research, Lund University, Lund, Sweden.
- Arkin, Robert M., James M. Gleason, and Shawn Johnston (1976), "Effect of Perceived Choice, Expected Outcome, and Observed Outcome of an Action on the Causal Attributions of Actors," *Journal of Experimental Social Psychology*, 12 (2), 151-158.
- Averill, James R. (1973), "Personal Control over Aversive Stimuli and Its Relationship to Stress," *Psychological Bulletin*, 80 (4), 286-303.
- Bansal, Harvir S. and Shirley F. Taylor (2002), "Investigating Interactive Effects in the Theory of Planned Behavior in a Service-Provider Switching Context," *Psychology and Marketing*, 19 (5), 407-425.
- , ———, and Yannik St. James (2005), "'Migrating' to New Service Providers: Toward a Unifying Framework of Consumers' Switching Behaviors," *Journal of the Academy of Marketing Science*, 33 (1), 96-115.
- Barczak, Gloria, Pan Scholder Ellen, and Bruce K. Pilling (1997), "Developing Typologies of Consumer Motives for Use of Technologically Based Banking Services," *Journal of Business Research*, 38, 131-139.
- Baron, Reuben M. and David A. Kenny (1986), "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," *Journal of Personality and Social Psychology*, 51 (6), 1173-1182.
- Bateson, J. E. G. (1985), "Self-Service Consumer: An Exploratory Study," *Journal of Retailing*, 61 (3), 49-76.
- Bendapudi, Neeli and Robert P. Leone (2003), "Psychological Implications of Customer Participation in Co-Production," *Journal of Marketing*, 67 (January), 14-28.
- Bitner, Mary Jo (1990), "Evaluating Service Encounters: The Effects of Physical Surroundings and Employee Responses," *Journal of Marketing*, 54 (April), 69-82.
- , Amy L. Ostrom, and Matthew L. Meuter (2002), "Implementing Successful Self-Service Technologies," *Academy of Management Executive*, 16 (4), 96-108.
- , Stephen W. Brown, and Matthew L. Meuter (2000), "Technology Infusion in Service Encounters," *Journal of the Academy of Marketing Science*, 28 (1), 138-149.
- Botti, Simona, Ann L. McGill, and Sheena S. Iyengar (2003), "Preference for Control and Its Effect on the Evaluation of Consumption Experiences," in *Advances in Consumer Research*, Vol. 30, Punam Anand Keller and Dennis W. Rook, eds. Valdosta, GA: Association for Consumer Research, 127-128.



- Brown, Susan A., Anne P. Massey, Mitzi M. Montoya-Weiss, and James R. Burkman (2002), "Do I Really Have To? User Acceptance of Mandated Technology," *European Journal of Information Systems*, 11, 283-295.
- Chang, Chia-Chi (2006), "When Service Fails: The Role of the Salesperson and the Customer," *Psychology and Marketing*, 23 (3), 203-224.
- Clee, Mona A. and Robert A. Wicklund (1980), "Consumer Behavior and Psychological Reactance," *Journal of Consumer Research*, 6 (4), 389-405.
- Cranage, David and Harish Sujana (2004), "Customer Choice: A Preemptive Strategy to Buffer the Effects of Service Failure and Improve Customer Loyalty," *Journal of Hospitality and Tourism Research*, 28 (1), 3-20.
- Curran, James M., Matthew L. Meuter, and Carol F. Surprenant (2003), "Intentions to Use Self-Service Technologies: A Confluence of Multiple Attitudes," *Journal of Service Research*, 5 (3), 209-224.
- Dabholkar, Pratibha A. (2000), "Technology in Service Delivery: Implications for Self-Service and Service Support," in *Handbook of Services Marketing and Management*, Teresa A. Swartz and Dawn Iacobucci, eds. Thousand Oaks, CA: Sage, 103-110.
- (1996), "Consumer Evaluations of New Technology-Based Self-Service Options: An Investigation of Alternative Models of Service Quality," *International Journal of Research in Marketing*, 13, 29-51.
- (1994), "Technology-Based Service Delivery: A Classification Scheme for Developing Marketing Strategies," in *Advances in Services Marketing and Management*, Vol. 3, Teresa A. Swartz, David E. Bowen, and Stephen W. Brown, eds. Greenwich, CT: JAI Press, 241-271.
- (1992), "The Role of Prior Behavior and Category-Based Affect in On-Site Service Encounters," in *Diversity in Consumer Behavior*, Vol. XIX, John F. Sherry and Brian Sternthal, eds. Provo, UT: Association for Consumer Research, 563-569.
- and Richard P. Bagozzi (2002), "An Attitudinal Model of Technology-Based Self-Service: Moderating Effects of Consumer Traits and Situational Factors," *Journal of the Academy of Marketing Science*, 30 (3), 184-201.
- , L. Michelle Bobbitt, and Eun-Ju Lee (2003), "Understanding Consumer Motivation and Behavior Related to Self-Scanning in Retailing," *International Journal of Service Industry Management*, 14 (1), 59-95.
- Day, Ellen and Marla R. Stafford (1997), "Age-Related Cues in Retail Services Advertising: Their Effects on Younger Consumers," *Journal of Retailing*, 73 (2), 211-233.
- Fishbein, Martin and Icek Ajzen (1975), *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.
- Fitzsimons, Gavan J. (2000), "Consumer Response to Stockouts," *Journal of Consumer Research*, 27 (2), 249-266.
- and Donald R. Lehmann (2004), "Reactance to Recommendations: When Unsolicited Advice Yields Contrary Responses," *Marketing Science*, 23 (1), 82-94.
- Frambach, Ruud T., Henk C. A. Roest, and Trichy V. Krishnan (2007), "The Impact of Consumer Internet Experience on Channel Preference and Usage Intentions across the Different Stages of the Buying Process," *Journal of Interactive Marketing*, 21 (2), 26-41.
- Gatignon, Hubert and Thomas S. Robertson (1991), "Innovative Decision Processes," in *Handbook of Consumer Research*, T. S. Robertson and H. H. Kassarian, eds. Englewood Cliffs, NJ: Prentice Hall, 316-348.
- Harrison-Walker, L. Jean (2001), "E-Complaining: A Content Analysis of an Internet Complaint Forum," *Journal of Services Marketing*, 15 (5), 397-412.
- Hess, Ronald L., Jr., Shankar Ganesan, and Noreen M. Klein (2003), "Service Failure and Recovery: The Impact of Relationship Factors on Customer Satisfaction," *Journal of the Academy of Marketing Science*, 31 (2), 127-145.
- Hui, Michael K. and Roy Toffoli (2002), "Perceived Control and Consumer Attribution for the Service Encounter," *Journal of Applied Social Psychology*, 32 (9), 1825-1844.
- and John E. G. Bateson (1991), "Perceived Control and the Effects of Crowding and Consumer Choice on the Service Experience," *Journal of Consumer Research*, 18 (2), 174-184.
- Keaveney, Susan M. (1995), "Customer Switching Behavior in Service Industries: An Exploratory Study," *Journal of Marketing*, 59 (2), 71-82.
- and Madhavan Parthasarathy (2001), "Customer Switching Behavior in Online Services: An Exploratory Study of the Role of Selected Attitudinal, Behavioral, and Demographic Factors," *Journal of the Academy of Marketing Science*, 29 (4), 374-390.
- Kiesler, Charles A. (1971), *The Psychology of Commitment*. New York: Academic Press.
- Kiviat, Barbara (2007), "The End of Customer Service," *Time*, March 24. [http://www.time.com/time/specials/2007/article/0,28804,1720049\\_1720050\\_1721684,00.html](http://www.time.com/time/specials/2007/article/0,28804,1720049_1720050_1721684,00.html) (accessed August 21, 2008)
- Klein, Jill Gabrielle, N. Craig Smith, and Andrew John (2004), "Why We Boycott: Consumer Motivations for Boycott Participation," *Journal of Marketing*, 68 (July), 92-109.
- Lee, Jungki and Arthur Allaway (2002), "Effects of Personal Control on Adoption of Self-Service Technology Innovations," *Journal of Services Marketing*, 16 (6), 553-572.
- Linder, Darwyn E., Joel Cooper, and Edward E. Jones (1967), "Decision Freedom as a Determinant of the Role of Incentive Magnitude in Attitude Change," *Journal of Personality and Social Psychology*, 6, 245-254.
- McKee, Daryl, Christina S. Simmers, and Jane Licata (2006), "Customer Self-Efficacy and Response to Service," *Journal of Service Research*, 8 (3), 207-220.
- Meuter, Matthew L., Mary Jo Bitner, Amy L. Ostrom, and Stephen W. Brown (2005), "Choosing among Alternative Service Delivery Modes: An Investigation of Customer Trial of Self-Service Technologies," *Journal of Marketing*, 69 (April), 61-83.
- , Amy L. Ostrom, Mary Jo Bitner, and Robert Roundtree (2003), "The Influence of Technology Anxiety on Consumer Use and Experiences with Self-Service Technologies," *Journal of Business Research*, 56 (11), 899-906.
- , ———, Robert I. Roundtree, and Mary Jo Bitner (2000), "Self-Service Technologies: Understanding Customer Satisfaction with Technology-Based Service Encounters," *Journal of Marketing*, 64 (3), 50-64.
- Montoya-Weiss, Mitzi M., Glenn B. Voss, and Dhruv Grewal (2003), "Determinants of Online Channel Use and Overall Satisfaction with a Relational, Multichannel Service Provider," *Journal of the Academy of Marketing Science*, 31 (4), 448-458.
- Moore, Gary C. and Izak Benbasat (1991), "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Adoption," *Information Systems Research*, 2 (3), 192-222.
- Nysveen, Herbjørn, Per E. Pedersen, and Helge Thorbjørnsen (2005), "Intentions to Use Mobile Services: Antecedents and Cross-Service Comparisons," *Journal of the Academy of Marketing Science*, 33 (3), 330-346.

- Parasuraman, A. (2000), "Technology Readiness Index (TRI): A Multiple-Item Scale to Measure Readiness to Embrace New Technologies," *Journal of Service Research*, 2 (4), 307-320.
- Patterson, Paul G. and Tasman Smith (2003), "A Cross-Cultural Study of Switching Barriers and Propensity to Stay with Service Providers," *Journal of Retailing*, 79, 107-120.
- Pritchard, Mark P., Mark E. Havitz, and Dennis R. Howard (1999), "Analyzing the Commitment-Loyalty Link in Service Contexts," *Journal of the Academy of Marketing Science*, 27 (3), 333-348.
- Ram, S. and Hyung-Shik Jung (1991), "'Forced' Adoption of Innovation in Organizations: Consequences and Implications," *Journal of Product Innovation Management*, 8 (2), 117-126.
- Walton, John R. and Eric N. Berkowitz (1985), "Consumer Decision Making and Perceived Decision Freedom," in *Advances in Consumer Research*, Vol. 12, Elizabeth C. Hirschman and Morris B. Holbrook, eds. Provo, UT: Association for Consumer Research, 461-464.
- Ward, James C. and John W. Barnes (2001), "Control and Affect: The Influence of Feeling in Control of the Retail Environment on Affect, Involvement, Attitude, and Behavior," *Journal of Business Research*, 54, 139-144.
- Zeithaml, Valarie A., Leonard L. Berry, and A. Parasuraman (1996), "The Behavioral Consequences of Service Quality," *Journal of Marketing*, 60 (April), 31-46.
- Zuckerman, Miron, Joseph Porac, Drew Lathin, and Edward L. Deci (1978), "On the Importance of Self-Determination for Intrinsically Motivated Behavior," *Personality and Social Psychology Bulletin*, 4 (3), 443-446.

**Machiel J. Reinders**, MSc (VU University Amsterdam), is a researcher at the Agricultural Economics Research Institute, Wageningen University, Netherlands. He is working on his doctoral dissertation on consumer innovation adoption (VU University Amsterdam). His research focuses on consumer resistance toward the adoption of new products.

**Pratibha A. Dabholkar**, PhD (Georgia State University), is an associate professor in the Department of Marketing and Logistics at the University of Tennessee. Her research interests include technology in services marketing; Internet marketing; attitude, choice, and means-end models; service quality; customer satisfaction; and customer (B2B and B2C) relationships.

**Ruud T. Frambach**, PhD (Tilburg University), is a professor in the Department of Marketing at VU University Amsterdam, Netherlands. His research focuses on innovation adoption and diffusion as well as firms' marketing strategy related to new products.