Using Customer-Facing Technology to Create New Business Value: Insight From the Public and Private Sector into the Changing Value Equation

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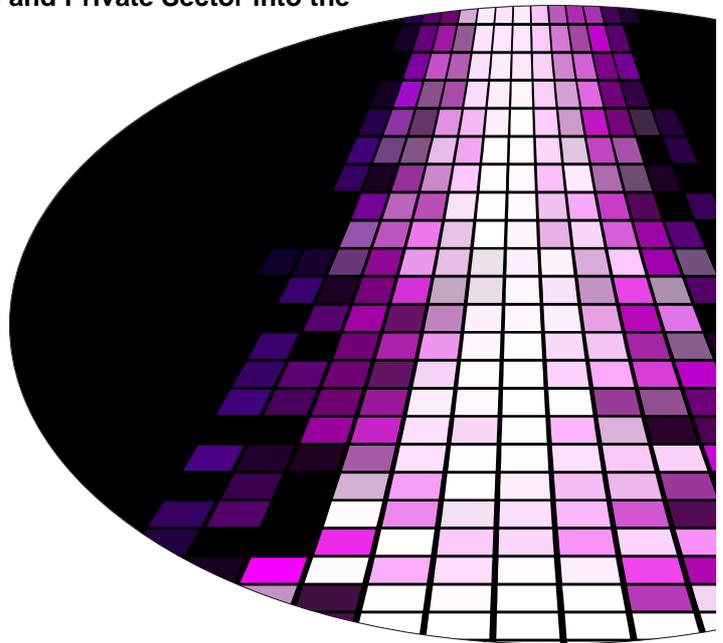
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Abstract

The objective of this research was to address two main questions regarding self-service and the changing value equation: Has the self-service value equation changed in the current downturn? How can organizations leverage information systems and customer-facing technology to create new value for customers and even attract more customers? Qualitative data collection and analysis of in depth interviews of public and private sector organizations in the US and Australia were conducted from 2007-2010. To ensure accuracy and to promote triangulation, notes from interviews were transcribed, reviewed and verified by key actors in order to increase the reliability of the study (Yin, 1994). The data was coded following the methods described by Yin (1994) and Miles and Huberman (1984). Nvivo software was used for this analysis. Some organizations within the public and private sectors are surviving the economic downturn by leveraging technology to do "more with less" in order to deliver better services to customers. This has been achieved by identifying what costumers value most in order to ensure loyalty: choice, control and convenience. These organizations are particularly focusing on "customer loyalty" and "customer delight" as metrics for success. Many organizations both public and private are struggling with the challenge of identifying value, coupling that with technology strategy and delivering value. This case research provides policy makers and business practitioners with practical insight into value creation for customers or citizens using customer-facing technology.

INTRODUCTION

The rise of customer acquisition costs coupled with the growing need to create value for customers in order to retain them, poses challenges and opportunities leveraging technology. The challenges revolve around the need to create a "high touch" experience which many customers and also relate to rapid problem resolution and the anticipation of needs. In the past, scholars have suggested that customer facing technology is unable to provide this value to customers. However, this case analysis of extensive customer-facing technology adoption in both corporate high-

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end hospitality and public service suggests this value system has changed. The opportunities to successfully leverage self-service technology are embedded in the vast array of customer information personalizing the experience by offering choices, enabling convenience and providing the customer with a sense of control. While these activities provide value to the customer, Customer delight theory suggests they may not have the flexibility involved in a personalized interaction with a customer service representative empowered to anticipate needs and even resolve problems. Therefore, the self-service option is considered to be "lower value" in terms of this theoretical construct. Consequently, firms and government organizations alike face the complexity of often providing dual systems which involve automated self-service and personalized care. However, there is growing evidence that the self-service value equation is changing. The objective of this research was to address two main questions regarding self-service and the changing value equation: Has the self-service value equation changed in the current downturn? How can organizations leverage information systems and customer-facing technology to create new value for customers and even attract more customers? To help answer these questions this research analyzes data collected from one of the world's largest multi-national hotel chains and the Australian government's reform of e-government services from 2008-2010.

Of relevance to this research is the "Customer Delight" literature that suggests that there is an important difference between customer satisfaction and customer delight (Berman, 2005). More specifically, customer satisfaction is a baseline in which customer expectations are met or exceeded. Customer delight occurs when customers experience a mixture of joy and surprise (Berman, 2005). In this regard Hemp (2002) finds that meeting customer expectations at high end hotels is not enough but rather customer needs have to be anticipated and that great customer service in this industry is based on dynamic principles rather than a rigid formula. This poses significant challenges for using technology to achieve high-end service. Furthermore, the very human concepts of "empathy" and "selflessness" must be powerfully embedded in employees in order to achieve what Hemp labels "extreme" customer service. These issues must be considered when implementing technology, particularly self-service technology. This research suggests extending the customer delight model, to include: customer control, convenience and choice. There is also some indication that rapid problem identification and rapid problem resolution could be critical elements of customer delight. These elements are key technology enabled elements which can be considered an extension of "customer delight" in terms of value creation through convenience, choice and control.

Also of relevance theoretically is the Technology Acceptance Model. This established theory explains the relationship between ease-of-use and perceived

usefulness. In addition, recent work (Griffy-Brown et al, 2008; Delone and McClean, 2003) extends this explanation to incorporate the concepts of customer satisfaction. While this quantitative model is indirectly related to the qualitative research conducted here, it is important to consider in terms of the questions related to how the evolving self-service equation relates to costs and value creation leveraging information systems.

THE TECHNOLOGY ACCEPTANCE MODEL

TAM is a frequently cited technology adoption model in information systems research. TAM compares Behavioral Intentions and Usage and states that behavioral intention is an indicator of computer usage. Additionally, TAM states that Attitude directly influences Behavioral Intentions. Attitude is defined as the individual's attitude toward using the system. According to Davis (1989), several studies have found a relationship between attitude and usage.

TAM considers the impact of external factors on Attitude, and thus Behavioral Intentions, by adding two constructs that influence the technology adoption process. The first construct, Perceived Usefulness, is defined by Davis (1989) as the probability that using a specific application will increase a prospective user's job performance. The second construct, Perceived Ease of Use, is the degree to which the system is expected to be free of effort to use.

Both Percieved Ease of Use and Perceived Usefulness influence Attitude in TAM, thus influence Behavioral Intention through its direct relationship with Attitude. In addition to its influence on Behavioral Intention through Attitude, Perceived Usefulness has a direct relationship with Behavioral Intention. TAM has satisfactorily predicted intentions and usage for individuals, primarily in an organizational context and is a well established theory.

There is a link between the TAM theory and technology adoption and diffusion. According to Teo and Lim (1999) if a system is easy to use, it requires less effort on the part of the users, thereby increasing the likelihood of its adoption and diffusion. In addition, there is a body of literature which links the determinants of user satisfaction and technology acceptance (DeLone and McLean, 2003). In this body of literature, user satisfaction is linked to behavior-based beliefs found in the TAM and beliefs and attitudes related to customer satisfaction. The relevant concepts of customer satisfaction and customer delight are discussed below.

CUSTOMER DELIGHT THEORY

The primary theoretical foundation of this research requires consideration of the notion of personalized, high touch service or "Customer Delight" in the context of self-service technology. Customers at high-end hotels tend to value the experience of having their expectations exceeded and even anticipated. Furthermore, according to Customer Delight theory (Hemp, 2002; Berman,

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2005) high quality service should be empathetic and provide a mixture of "joy" and "surprise". Typically, self-service technology, such as ATMs, can be viewed as an attempt to save money by commoditizing the experience. However, in some circumstances self-service can, to a certain extent, be empathetic and even anticipate the needs of the customer (Griffy-Brown et al, 2008). These circumstances include:

1. A target market which values time and convenience as high quality service
2. The information and choices anticipate customer needs based on previous data
3. The information and services provided allow for highly personalized service based on previous data
4. Choices of a machine or person are both equally available

Achieving this with self-service is a very complex and difficult task highly related to the level of technology adoption and diffusion. Most importantly, it critically depends on the value of time both for the provision of the service and problem resolution.

METHODOLOGY

Qualitative data collection and analysis of in depth interviews of public and private sector organizations in the US and Australia were conducted from 2007-2010. To ensure accuracy and to promote triangulation, notes from interviews were transcribed, reviewed and verified by key actors in order to increase the reliability of the study (Yin, 1994). The data was coded following the methods described by Yin (1994) and Miles and Huberman(1984). Nvivo software was used for this analysis.

This research was designed as a longitudinal, exploratory, multiple case study. A longitudinal analysis of the phenomenon aided in providing a rich understanding and evaluation of continuity and change (Yin 1994). This research design enabled the researchers to explore the phenomenon in a natural setting and to engage in theory-building in an area where there has been relatively little prior research across the public and private sectors and subsequently little theory formulation (Miles and Huberman 1984).

The strategy for data collection was triangulation was adopted because it involved multiple methods for collecting historical and longitudinal data and helped deal with problems of establishing construct validity and reliability (Yin 1994). The data were collected in two phases during a 48-month time period. Included was a review of how the organization developed the customer-

facing technology. The primary sources of data were archived organizational internal analyses, organization charts, strategic planning documents, minutes of meetings, external consultant analysis reports, internal correspondence, memos, and e-mails. Secondary sources included industry reports, public disclosures, media publications, and Internet articles. The interview format was semi-structured and used open-ended questions.   To ensure accuracy and to promote triangulation, interviews were recorded, transcribed, reviewed and verified by key actors involved. A data resource was generated to organize and document the data collected from the field (Yin 1994).

EVOLUTION OF SELF-SERVICE TECHNOLOGY

The critical challenge in a service-based industry was that customers expected choice, control and convenience (Figure 1). Airlines, banks and even grocery stores were changing customer expectations with respect to the expectation and trade-offs between these values. In the beginning, self-service was connected with fast-food and then gradually moved to gasoline and other applications where price and service were trade-offs. As technology became more pervasive and the value equation changed, there were ATMs. At this juncture, it wasn't that people chose self-service because it was lower quality or cheaper but because it was more convenient. As customers became more accustomed to the convenience offered by self-service, the perception changed so that self-service was seen as value-added, and in some instances as providing even greater service (Griffy-Brown et al, 2008).
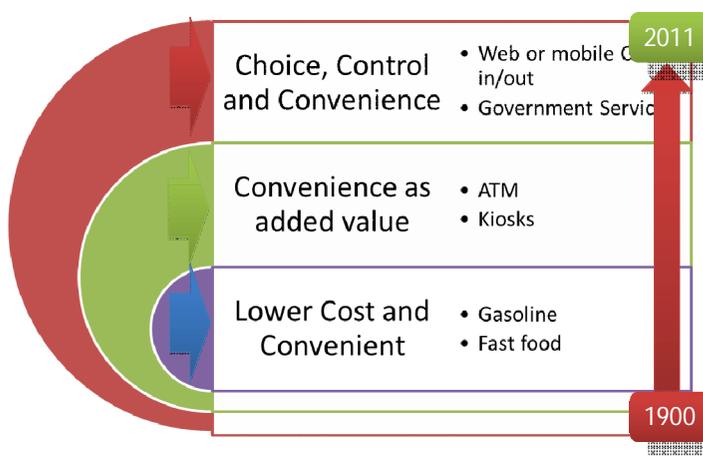
Figure 1: The Changing Self-Service Value Equation

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The Internet played a role in the transformation of this value equation as consumers became more and more accustomed to a variety of choices, mass customization, and immediate service. The travel industry leveraged Internet technology by enabling customers to use self-service from home to book airline tickets and make hotel reservations.

Eventually the airlines, besieged by long security lines and rising costs, embraced kiosks at airports. Besides reducing wait times, self-service options such as kiosks cost about 16 cents a passenger whereas the ticket counter averaged $3.68 a passenger. The mathematics in the hotel industry was similar. The cost structure for web-based check-in worked out even lower than kiosks. In fact, if the same operational infrastructure was leveraged, such as scanning self check-in boarding passes at the airport using existing hardware, it is estimated that the costs could be as low as 12 cents per guest (Griffy-Brown et al, 2008).

Interviews showed that many people actually preferred impersonal machines which made them feel in control, according to one person interviewed, "We asked people about their traveling experience, and they said getting to the counter was like going in front of the school principal". Thus, using a service agent was an undesirable experience for the guest (Griffy-Brown et al, 2008).

Another person interviewed suggested, "People feel comfortable interacting with an ATM. Why wouldn't they like checking in using a machine?"

While there were notable disasters, self-service via the Internet and kiosks continued to proliferate in the US. Supermarkets and hardware stores were already rolling out automated check-out counters where customers scanned their own goods. Even health care providers were experimenting with using self-service kiosks for check-in, registration for appointments and updating insurance information. However, the complexity of human decision-making and service expectations imposed limits on the evolution of self-service kiosks. The growing use of mobile devices and the web created even greater opportunities for high-end service.

SELF-SERVICE IN PRACTICE - THE CASE OF A MAJOR HOSPITALITY FIRM

Guest usage during the first roll-out of a self-service kiosk at Hilton Hotels in 1997 was dismal. Key issues included, poor promotion, new technology coupled with an untrained customer, product reliability, & location. In addition, there was a very high failure rate for those guests who attempted to use the technology. Other key issues included: a high failure rate of the key encoder (as high as 25%), an inability to locate the reservation, and general kiosk operational failures (the kiosk would run out of keys & paper). Sometimes the kiosk could not find the customer's reservation because a different credit card was used, or the date for the reservation was incorrect because the customer was early. Kiosks would terminate the session and inform guests to go to the front desk if a room was not

available. The result was frustrated guests who had to then go wait in line after trying to use the machine.

In some cases the kiosk just did not "know" that the room was already cleaned. This meant that customers were told by the kiosk to wait for rooms that were in fact ready to be occupied. Needless to say, guests were extremely frustrated. Importantly, the kiosks were very large and obtrusive. As a result, general managers would place them "out of the way" so as to not ruin lobby aesthetics. This made the kiosks difficult to find, cutting down on their "convenience". Finally, the original designers had been excited about the possibilities the technology held, in that it could provide easy Internet access for finding places in the area to eat or local entertainment. However, this created lines at the kiosks guest (Griffy-Brown et al, 2008).

Figure 2 highlights critical success factors outlined prior to the new rollout of the kiosks based on work with IBM Consulting Services. With these identified success factors, a project plan was developed in which Hilton partnered with IBM to implement self-service kiosks in their hotels focusing on basic check-in/check-out functionality only. The primary goal was to ensure a high success rate for all kiosk users. Significant testing also involved customer-facing staff using the systems behind the counter to check customers in, so that system viability could be tested and holes identified customers needs in the back office before customers even tried out the new technology. Hilton also developed operational plans to ensure that kiosks were successful, including team member support, guest promotions, technology implementation, and training. This foundation formed the basis for extending self-service to the Internet (Griffy-Brown et al, 2008).

- **Know your customer** – focus transactions on targeted audience and location
- **Simplify the user interface** – make the interface simple to use and easy to understand – in particular, spend time on the identification process
- **Make self service compelling** – design with the goals that the process will be better than today and that customers can use self service every time they travel
- **Focus the functionality** – avoid using "jack of all trades" devices
- **Know your infrastructure** – understand infrastructure constraints and guidelines
- **Location, location, location** – position self service to best accommodate a customer's natural flow and optimized transaction speed – and ensure the minimization of performance issues
- **Align with business model** – avoid using self service for functions that your business model does not support
- **Think adoption** – assist the customer in "seeing and using" self service through agents, signage, incentives…
- **Manage operational expectations** – do not expect self service to work for every customer all of the time
- **Leverage staff** – ensure that staff become ambassadors for self service and consider using a self service concierge in the early days and at peak
- **Aggressive, controlled implementation** – incorporate feedback along the way
- **Utilize the assets** – self service is mission critical – keep it up and running
- **Ensure consistency** – deploy the application consistently across other channels

Source: Griffy-Brown et al, 2008

Figure 2: Critical Success Factors

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In September 2003, after Hilton installed and tested guest self-service kiosks, one user interviewed stated, "Business travelers want things quick and easy." Even reluctant Hilton front-office staff said. "It's a line-busting application." The second implementation, learning from the difficulties of the first attempt was very successful. Figure 3 highlights the benefits and challenges for the introduction of the Self Service Kiosks in an industry where one experience that doesn't meet expectations could mean the loss of a customer or minimally a reduction in customer loyalty.

Customer Benefits
- **Choice -** Guests get to chose from <u>both</u> a high touch offering (the traditional guest check-in) <u>and</u> a high tech option that will provide a more efficient check-in.
- **Convenience –** It's often easier and more convenient to check in using self-service technology. "On My Terms"
- **Control** – I get to drive the process and select among options that are important to me. "I'm in control…no surprises."

HHC Benefits
- **Guest Loyalty** – Customer benefits will continue to improve customer loyalty.
- **Competitive Positioning** – Technology driven differentiators will continue to cast Hilton as the technology leader.
- **Operating Efficiencies** – Automation of clerical front desk functions should enhance productivity.

Challenges
- **Guest Acceptance** – Guest usage during the project was dismal. Key issues included poor promotion, new technology/untrained customer, product reliability, & location.
- **Reliability** – Very high failure rate for those guests who attempted to use the technology. Key issues included: as high as 25% failure rate of key encoder, inability to locate the reservation, and general kiosk operational failures (kiosk would run out of keys & paper)
- **Room Availability** – Kiosks would terminate the session and inform guests to go to the front desk if a room was not available. Created guest frustration.
- **Size and Placement** – Kiosks were very large and obtrusive. As a result, general managers would place them "out of the way" so as to not ruin lobby aesthetics.

Source: Griffy-Brown et al, 2008

Figure 3: Customer Identified Benefits for Self Service at Hilton

The Hilton experience, exemplified in the case above, highlights the critical values engendered in self-service technology: Choice, Control and Convenience. The question is, "Are these values particular to the hotel or hospitality industry (in a US multinational) or do they transcend these boundaries?" Do they transcend the national boundary and the private sector experience? To test this we will take an in-depth look at a customer-facing technology in the Australian public sector to see if these values are articulated there as well.

THE PUBLIC SECTOR EXPERIENCE - THE CASE OF THE AUSTRALIAN GOVERNMENT

Starting in 2008 a major initiative to strengthen Australian Public Service was announced by the Prime Minister. Strengthening multiple channels for providing services for citizens was considered

paramount in this endeavor and one particular focus was understanding the role the Internet was playing in creating value for citizens. Two key reports were commissioned and completed in 2009. The first was, "Benchmarking Australian Government Administration Performance" published by KPMG in November 2009 and the second was "Interacting with Government" also published in November 2009 by the Australian Government Information Management Office under the Department of Finance and Deregulation. Based on the findings of these reports, the Australian government and its information systems underwent reform to enhance the e-government services which, like Hilton Hotels, often revolved around the increasing value of choice, convenience and control. The value of time or "convenience" was critically important to these reforms.

Importantly, the preference for the Internet in contacting the government has increased overtime while a preference for in-person contact has decreased over the same time period as shown in Figure 4. The critical question for this study is "How has the value equation changed?" and "What adoption and diffusion factors influenced this change in preference?"
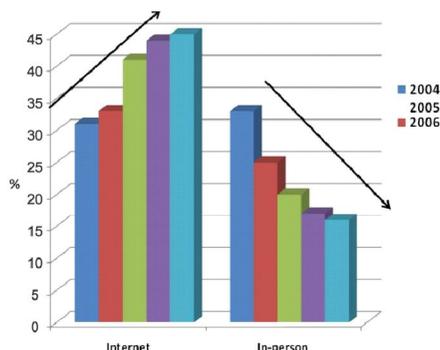
Source: Survey of the Australia Office of Information Management

Q4. Thinking of this most recent contact, did you do this...?
Q11. If you could access government services by landline telephone, over the Internet, by mail, in person, by mobile phone or by some
other method, what would be your preferred way of doing it?
Base: Respondents whose last contact with government was by Internet (n=1336); telephone (n=1082); in person (n=1254); mail(n=316)
Note: Percentages may not add up to 100% because respondents were able to nominate a preferred method of contact other than those summarised above

Figure 4: Preferred Way of Interacting with Government

The position of the Internet as the preferred means of accessing government services was well established by 2009. According to the data presented in Figure 4:
● Preference for the Internet when contacting government increased each year since 2004-05.

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- Over two in five (45%) people now preferred to contact government via the Internet.
- Preference for contacting government in person steadily declined to the point where only half as many people (17%) now nominate this as their preference compared with 2004-05 (33%).
- Overall, four in five (78%) people would prefer to use the Internet, telephone or mobile phone to contact government.

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In order to understand the changing value equation exemplified in these changing preferences, it is critical to look at reasons specified for preferences and compare both in-person and the Internet. For this analysis, similar to the Hilton Hotels case above, the preference and value imputed to Internet transactions changed over time for the e-government roll-out in Australia. Figure 5 shows the most common reasons that citizens mentioned for using the Internet for government transactions. These reasons demonstrate a shift in the value equation for the Internet as described in the self-service framework presented earlier. The value of time is clearly articulated and continued to grow from 2007-2009 (conducting the transaction at a time that is suitable and for a shorter time as well as not standing in line). However, the value of control increased and almost doubled over the same time period. Importantly, transparency was also a value that has noticeably changed from 2007-2009. Over this period of time the importance of having consistent access to information was an important factor.
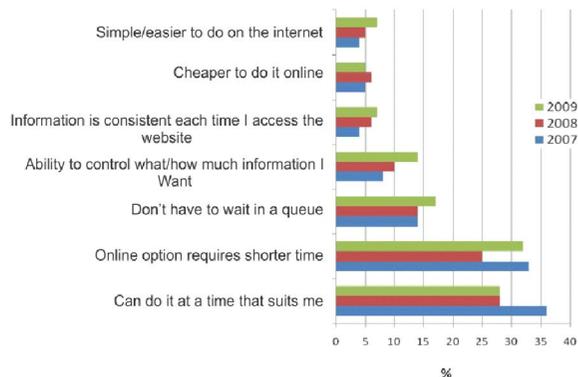
Source: Survey of the Australia Office of Information Management

2009 and 2008 Q8. Still thinking of this most recent contact, why did you do it over the Internet instead of using the phone? Why else?Anything else?
2007 Q8.Still thinking of this most recent contact, why did you do it over the Internet rather than by the phone or some other way?Why else? Anything else?
Base: Respondents who chose the Internet over the telephone (n=1179)
Note 1: The wording of the question has changed slightly over the past four studies. In 2008 the scope of the question was changedto a comparison of the Internet with the telephone rather than a comparison of all other channels. This change should be noted when comparing previous studies with the 2008 and 2009 studies.
Note 2: Respondents were able to give more than one reason for making contact by Internet
Note 3: Only the most common reasons are included in the figure above.

Figure 5: Most Common Reasons for Using the Internet

Finally, for the Australia e-government case, in order to understand factors influencing adoption and diffusion we need to understand the factors that influenced the changing preferences for particular service delivery channels. According to the survey data from 2004-2009, a person's preference for a particular service delivery channel is influenced by the reason for the contact, location, and whether they have a broadband connection. Over two in five (43%) of those who provided information prefer the Internet while three in ten (31%) prefer the telephone. Furthermore, whether or not an Internet user had a broadband connection strongly influenced their preferred service delivery channel. Finally, those living in metropolitan and rural/remote areas were more likely to prefer using the Internet to contact government (49% and 40% respectively) than residents of regional areas (37%).

Citizens interviewed in focus groups reinforced the values of convenience, control and choice. They also suggested that these values crossed both the public and private sectors:

"…something they could learn from the private sector is that constant monitoring of their own website, having someone to help out and to navigate the website with you would be helpful."

Interestingly, just as the property management system of Hilton created value through rapid problem resolution, those interviewed suggested a similar value existed for the Australian e-government.

"..It would be good to have 48 hours as a blanket across government departments so that if you did contact them, you would know that somebody's received it, you know they're looking at it and you know within what timeframe it will be for them to get back to you."

CONCLUSIONS

What the comparison of these two cases suggests is that there is a consistent change in the value equation for customer-facing technology, particularly self-service technology or Internet driven technology which enables transactions, traditionally done with a customer service representative, to be completed by the customer alone over the Internet. The value equation appears to elevate the values of choice, control and convenience to a level commensurate with "customer delight" that is exceeding and driving customer expectation.

These cases demonstrated that some organizations within the public and private sectors are surviving the economic downturn by leveraging technology to do "more with less" in order to deliver better services to customers. This has been achieved by identifying what they value most in

order to ensure loyalty: convenience, choice and control. These organizations are particularly focusing on "customer loyalty" and "customer delight" as metrics for success. However, "customer delight" or anticipating customer expectation also involves transparency, and rapid problem resolution. Many organizations both public and private are struggling with the challenge of identifying value, coupling that with technology strategy and delivering value. The main contribution of this analysis is that it ties together the diffusion of innovations theory, customer delight theory and an actual IS implementation of a self-service technology. Furthermore, these cases demonstrate the importance of thinking through these theories and extending them in light of the reality of dynamic concepts of customer value. It also provides insight into the unique process and technical challenges associated with adopting and diffusing IS in the customer-facing realm for a service provider either in the public or private sectors. Most importantly, these cases show that the new values of choice, control and convenience cross both the public and private sector domains. Future work should explore quantitatively, the mechanism for successfully determining this dynamic value system and its relationship (if any) to cost. The cultural dimensions of this dynamic system should also be explored.

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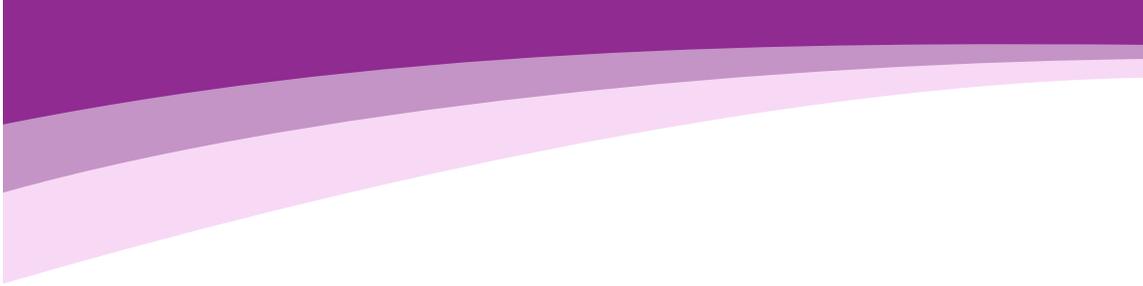
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