October 2021

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Abstract - Mobile banking has become a prevalent part of everyday banking, and almost all banks have adopted its use. This form of self-service has seen wide adoption because of its ease of use, performance, reliability, and enjoyment of use. These attributes of technology-based self-service options help both customers and businesses determine the value of the service. The proposed customer value model aims to conceptually represent how companies and customers perceive the value of a product or service and pinpoint gaps between these values. This paper presents the customer value model in the context of mobile banking. This new context is part of the service industry and allows for the introduction of two new service gaps; the service recovery gap and the word of mouth gap. Mobile banking has become increasingly relevant over the past couple of decades. This updated model allows marketers to understand better value from the customer's perspective and the company pertaining to mobile banking and a new era of the service industry.

Keywords - Self-Service Technology, Customer Value, Mobile Banking

Relevance to Marketing Educators, Researchers, and/or Practitioners - Identification of service gaps is crucial in self-service-based technologies. The customers produced and consumed the service using kiosks, mobile apps, or websites. In this conceptual paper, the researchers identified prominent macro and micro level gaps that are happening when customers are using mobile apps in the banking industry. These gaps may also occur in any sector investing in self-service technologies. Managers and educators will benefit from focusing on how to close them to increase customer engagement and satisfaction.

Introduction

The use of Self-Service Technology (SST) in customer interactions has increased tremendously over the past ten years. This technology has changed and evolved over time. When first introduced, Automated Teller Machines (ATM) and Self-checkouts were only SST forms. ATMs allow customers to deposit and withdraw money, as well as check their bank account balance without going inside or speaking to a bank teller. In a similar fashion to ATMs, self-Checkouts allow customers of brick-and-mortar stores to scan their items and pay at a station without seeing a cashier (Smilansky, 2018). In recent years, companies have started implementing mobile applications into their transactions and customer interactions to decrease labor costs, increase availability, and eliminate human error (Jacobs, 2019). Even though SSTs can enable many positive aspects of modern business, the increasing use of this form of service can also cause

miscommunication and disintermediation, especially among companies and their consumers. It is vital to understand the history of SSTs and how they have changed customer interactions throughout their history.

Self Service Technology has continually developed and changed over time. The first recorded SST was a vending machine-like device that dispensed holy water in Egyptian temples. In the early 1600s, small brass machines were installed in English taverns that dispensed tobacco. The first coin-operated vending machines were introduced in the late 1880s in London, England. These machines distributed postcards and were soon adapted to dispense envelopes and notepaper (Bellis, 2020). The next significant advancement in SST was in 1964 with the self-service gas pump. This new type of pump allowed customers to pump gas into their cars without needing a gas station employee to do anything for them. This would require a little more effort on the customer's side but freed the gas station clerk up to do other things (QuikServe, 2018). In 1992, self-checkouts were first introduced, and by 2003, they were commonplace in prominent supermarket chains across America. Self-Checkouts allowed customers to scan and bag their groceries. These self-checkout lines typically moved faster and did not need to be manned by an employee, thus freeing staff up to do other vital store functions (Pratt, 2019).

Fast forward to 2020, and self-service technology resides in almost all sectors of business. The latest leap of self-service technology comes in mobile and online technology-based self-service (TBSS) options. Many companies, regardless of their size or industry, offer some or all of their services to be done online or from a phone or tablet application (app). These services vary depending on the type of company offers. Still, some examples include financial services such as mobile payments and online banking, brick and mortar services such as online shopping and ready in-store pick up, and medical or cosmetic services such as appointment scheduling and appointment categorization. Common uses and examples of companies that use these TBSS's are shown below in Table 1. This use of technology allows customers to handle many service interactions on their own, rather than needing to call a customer service line or go to a physical location.

Table 1: TBSS Usage Examples

Industry	Use Cases	Example(s)
Financial	Mobile Banking, Online Banking, Mobile Payments	Bank of America Mobile App
Retail	Online shopping and delivery, In-Store Pickup	Amazon Prime, Wal-Mart In-Store Pickup
Food	Online ordering and delivery, third party delivery services	Uber Eats, Dominos Online Ordering, and Delivery
Medical	Self-Monitoring and self-management services	Blood Pressure Companion application
Cosmetic	Appointment Scheduling and Categorization	Great Clips Appointment Scheduling and Check-in

Source: Information gathered from company websites

Developments in TBSS options have drastically changed the financial industry. They are going from branch operations and basic websites to mobile websites and mobile applications in just a few years (Arcand et al., 2017). Mobile banking has been a significant advancement in TBSS options in the financial industry. Mobile banking has seen mass adoption by financial institutions

and consumers alike. There are 57 million mobile banking users in the United States, and 86 percent of banks offer bill pay via a mobile banking application (Nace, 2019). Mobile banking services range from bank to bank, but typical offerings include balance inquires, transfers, bill pay, and account opening. Bank of America has been a leader in the usage of mobile SST. Customers have been able to use the mobile application for online banking and online payment services since 2007, and today there are over 25 million active users of the application (Bank of America, 2020). Other financial institutions with the most desirable and popular mobile banking applications include Citibank, USAA, and Chase Bank (Digalaki, 2019).

While SST apps do not, and are not meant to, replace human customer service agents, there are many benefits of using mobile apps to handle customer service interactions from both the customer and the firm perspectives. Customers can use these apps and these services 24/7, enabling customers to conduct their business outside of the firms operating hours. This flexibility benefits the customer and helps the firm because it is not losing out on the customer's business. Mobile apps also enable firms to reap the benefits of standardized service delivery (Curran and Meuter, 2005). This ensures that each customer is getting the same service level no matter where or when they access the application. SSTs also benefit the customer because their service level does not depend on the particular employee helping them. Mobile apps are also the ideal workers. They never complain they don't take time off, and they never go home. Thus, saving the company money. This money is frequently invested back into the applications, making the service quality better for the customers. (Connolly, 2019).

While there are numerous benefits to using mobile apps for self-service, these applications are not without their downsides. Renju Chandran goes into detail about some of these downsides. His points are in the context of mobile banking but can be applied to any sector. He mentioned that the loss of a customer's mobile device means that their data could be compromised. He also mentions that customers living in places without adequate cell service or internet will not be able to take advantage of the service provided consistently. The same goes for customers whose phones run out of battery (Chandran, 2014). Another potential downside to mobile apps for self-service is that the customer runs the risk of their desired service not being offered in the mobile app. Solving this problem would require the customer to use the old service method, such as going to a physical location and speaking with a customer service agent.

Mobile Applications have quickly become the norm for many aspects of service throughout businesses, particularly in the financial industry. Mobile banking has enabled customers to control mobile payments, securities exchange, and online banking from their mobile devices without going to a bank or broker for guidance or assistance. While there are numerous benefits to this new wave of service, it can also lead to potential customer service gaps between firms and customers. The purpose of this paper is to explore how the Customer Value Model proposed by Anitsal and Flint (2008) can be applied and adapted to recent trends in self-service technology, and specifically mobile banking, to identify gaps in customer satisfaction within the service industry.

Literature Review

Throughout United States history and up until the year 1933, banking was widely distrusted by the public. When a customer deposited money into a bank, there was no assurance that they would withdraw that money back out. This changed in 1933 with the enactment of the Federal Deposit Insurance Coverage (FDIC) laws (Beattie, 2020). From that point on, public trust in the banking

system began to grow, and banking as an industry could modernize into what is seen today. Mobile Banking services were first introduced in the United States in the 1990s (Liao, 2018). Banking is no longer a place but is now an action. Almost all kinds of banking transactions can now be done online or from a mobile app. Balances can be checked, money can be transferred, checks can be deposited, and accounts can be opened, all at the customer's convenience (Tam and Oliveira, 2017).

There is an extensive appeal in TBSS's and specifically mobile banking, because they can standardize service delivery, reduce labor costs, and expand delivery options (Curran and Meuter, 2005). SST's standardize delivery by providing a consistent platform from which all customers conduct their business. A common platform alleviates employees' risk of not living up to the company's standards and eliminates human error. The development of these mobile apps reduces labor costs. Due to customers being able to conduct transactions online or from their phones, less frontline staff needs to be employed, as less traffic will be coming to the banking center. Delivery options are also expanded from the firm's side due to the capabilities of mobile application development. It is possible to customize the experience and even tailor it for each customer, offering the customer customization options to make the experience their own. Online banking customers are also much more likely to give the banks feedback than traditional, non-online customers (Mols, N.P., 1998). The development of mobile banking also offers a new service that was not previously available; Online account opening enables customers from anywhere to open an account with a specific bank. This can often be done in an app and allows banks to obtain customers that they previously would be geographically unattainable.

From the perspective of the customer, Mobile banking enables a new kind of efficiency and effectiveness. Some of those are time savings and ease of performing banking transactions. Sonnentag and Frese (2002) link this idea with higher customer satisfaction. These researchers noted that accomplishing tasks and performing at a high level creates feelings of pride and is a source of satisfaction. Simultaneously, low performance and not achieving the goals might be experienced as dissatisfaction or personal failure. In the context of mobile banking, this indicates that customers who conduct their own business and complete their transactions will, in turn, have higher satisfaction rates than those who do not (Tam and Oliveira, 2017). Mobile banking also has the added benefit of being free from time and place (Laforet and Xiaoyan, 2005). Users can use mobile banking apps outside of traditional banking hours and away from the physical location.

Customers choose to adopt mobile banking and other SST's for various reasons. The Technology Acceptance Model (TAM), initially proposed in 1992 (Adams et al., 1992), shows inputs as to why customers might potentially do so. This model's four inputs are ease of use, usefulness, need for interaction, and risk. These inputs feed into the customer's attitude towards the SST, which will determine their intention to use or not use the SST. This model is the basis of the customer's decision-making process in choosing whether or not to use self-service technology.

The Technology Acceptance Model was updated in 2002 by Pratibha Dabholkar. In TBSS, the new model changes the main inputs to ease of use, performance, and fun. Dabholkar's model also adds consumer traits that influence the attitude toward using the TBSS. These consumer traits are self-efficacy, inherent novelty seeking, need for interaction, and self-consciousness. The new model also adds situational factors that go into the intention to use the TBSS. These situational factors are perceived waiting time and social anxiety (Dabholkar, 2002). Dabholkar's new model was then tested for accuracy and correlations between these factors with the overall purpose of illuminating how and what aspects marketers should emphasize and to what groups (Table 2). Pikkainen (2004) applied Dabholkar's model to online banking in a study aimed to get a better

understanding of why consumers choose to adopt online banking. His results concluded that the most critical factors of adoption are the usefulness of the technology and the amount of information the technology can provide.

TABLE 2: TBSS Factors to Promote and To Whom

What to Promote	To Whom
Ease of use	Customers low in self-efficacy or have a high need for interaction
Performance or Reliability	Customers low in inherent novelty seeking or high in self-consciousness
Fun Aspects	Customers high in novelty-seeking, high in self-efficacy, high in self-consciousness, or have a high need for interaction with a service employee

Source: Dabholkar, 2002

Ghani et al. (2017) expanded TAM again by proposing adding E-customer service and customer satisfaction to the model. They hypothesized that customer service would positively influence customer satisfaction and that, inherently, customer service would positively influence the intention to adopt online and mobile banking. Their findings add customer service to the list of inputs that contribute to the customer's intention to use the SST.

All of these inputs that feed into the customer's intention to use the SST can be tied back to the concept of customer value. Generally speaking, when a customer does not find value in a product or service, they will not purchase that product or take advantage of that service. Woodruff (1997) defines customer value as "A customer's perceived preference for and evaluation of those product attributes, their performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations." He states that customer value is hierarchical with goals at the top of the hierarch, then consequences, and attributes at the bottom. When any of these individual values are achieved through a product or service, customers receive a corresponding satisfaction with the received value. Woodruff (1997) relates this idea of customer value to customer satisfaction in a TAM model. His model proposes that these desired customer values feed into the perceptions of received value on consequences and attributes and feeds into the comparison standards for consequences and attributes. From these points, customers can either have confirmation or disconfirmation. Confirmation would lead to positive customer satisfaction, and disconfirmation would lead to negative customer satisfaction feelings. These positive or negative feelings would lead to a positive or negative customer value of the product or service. As a whole, the hierarchy presents the idea that customers buy products and services to meet goals and needs that contribute to the customer's desired life.

The customer value model created by Haar et al. (2001) aims to connect the customer and company values. This model demonstrates two sets of values that contribute to the value of the final product or service. Customers have desired value in their minds, and the company designs the intended value for a product/service as they define it. These values represent the ideal product or service from the perspective of the consumer and company, respectively. *The information gap* occurs when desired, and intended values do not match.

The lack of sufficient information about what the customer wants may lead the marketing department to focus on the wrong customer needs. The expected value is what the customer can realistically expect. The designed value, on the other hand, is what the company can reasonably

deliver. Between these two values, a *perception gap* may occur. This gap represents the company's potential to provide a product or service that matches the customer's needs. Still, if the customer does not recognize the value the company offers, then it is unnecessary spending of company resources.

After customers procure or consume products/services, they will evaluate their value from the product or service, also known as the received value. Between the designed and expected values and the received value, there is a *satisfaction gap*. This gap represents how satisfied (or dissatisfied) the customer is with the product or service performance versus their previous expectations.

Anitsal and Flint (2008) updated the customer value model to propose new gaps, namely, the capability gap, the employee participation implementation gap, and the customer participation gap, between the values held by the retailer and the customer. At a more macro level, the capability gap can be between a customer's desired value and the company's designed value, or it can be between the company's intended value and the customer's expected value. Anitsal and Flint go into detail on this gap, stating that "The retailer is supposed to provide a designed value not far below the desired value, thus can easily match customer's expected value. Customers may also have a capability gap in providing practical information of their service desires and offering continuous feedback of her/his assessed perceptions; meaning expected value might even be greater than the intended value" (Anitsal and Flint, 2008, p. 67-68).

The qualitative study done by Anitsal and Flint (2008) helps expand the Customer Value Model proposed by Haar (2001). As noted by the authors, future researchers could test the model across different service sectors to validate and expand the updated customer value model. The next section of this paper aims to consolidate concepts from the previously discussed models and ideas and develop the Customer Value Model in mobile banking.

Discussion

To better understand and update the customer value model, previous gaps and connections must be confirmed and described in mobile banking. Table 3 below was updated with that purpose in mind. It shows the service gaps and corresponding values and provides examples to explain the gaps in the mobile banking context.

The information gap describes the gap between the customer's desired value and the bank's intended value. This gap exists when the bank has unreliable or insufficient information about what customer desires from a mobile banking platform or what value they obtain from it. This gap could occur if a bank decides to push a mobile banking or internet banking platform onto customers when customers would instead not use the new technology (Lang and Colgate, 2003).

When a bank has technical restraints or legal restraints on what they can offer in terms of mobile banking or a miscommunication between marketing and other units responsible for app development, *a design gap* may occur. An example of a design gap would be when a mobile application feature isn't working correctly or when an update to the application causes a feature to stop working as intended. This situation was illustrated perfectly by a user of the Bank of America application in an Apple review (2018): "since last few months, I'm not able to do a funds transfer to a payee registered with Bank of America account number. Everything goes fine until the step where it says that enter the safe passcode sent to your mobile number to complete the transfer, but it never sends the safe passcode, and the transfer can't be completed." This review illuminates that

the application had a technical issue. This reviewer brings up the performance failure in the TAM model (Adams et al., 1992). This user expected the application to perform in a certain way, and now that the expectation has been missed, they are less likely to adopt the technology in the future.

The compromise gap is seen when customers have no choice in using particular software and, in this case, mobile or online banking. Many retail banks, including Bank of America, have begun shutting down branches in favor of online and mobile banking. These closures are said to be the result of a shift in customers' preferred method of banking. Zachs Equity Research writes that other banks, including US Bancorp, JP Morgan, and Citigroup, take similar actions (Zachs Equity Research, 2019). This closing of branches forces customers in those areas to use online and mobile banking as their primary banking action.

The perception gap occurs when the customer has a different perception than the bank on the mobile application's value. This gap is evident in product reviews for mobile banking applications. One user of the Chase Mobile application reviewed the application on Apple's website (2019) and said, "The predominant use of gray text on a white background is not an improvement." This comment comes after Chase, in a 2019 update, changed the color of the text to look more appealing. Chase thought that changing the text to look more appealing would add value, Woodruff (1997) defined this as changing a product attribute, but at least to this reviewer, it did the opposite of add value.

The employee participation gap proposed by Anitsal and Flint (2008) is changed in the context of online and mobile banking due to a general lack of employee participation in this TBSS. The new gap proposed in this paper is *the platform optimization gap.* This gap occurs when customers cannot use the application on their device. Not every customer is going to have a smartphone, and banks need to be aware of this fact, especially in the case of the banks that are closing physical branches in favor of online options. Marous (2016) stated that 27 percent of users that do not have mobile banking said they did not have a smartphone needed to access it. The activation of this gap would completely prohibit a user from receiving the value that the company designed. In the TAM (Adams et al., 1992), this would represent the usability of the TBSS.

The customer participation gap occurs when customers do not take advantage of services offered within the application and do not get the company's entire value potential. This gap can be seen when customers of mobile banking applications use the app in minimalist ways or choose not to use the app, thus losing all value created by the application. This lack of adoption can occur for many reasons. Still, Shaikh and Karjaluoto (2015) said the top reasons aligned with Dabholkar's 2002 study consisted of compatibility, perceived usefulness, attitude toward TBSS, and trust in TBSS or company.

Table 3: Mobile Banking Self-Service Gaps

Service Gaps	CUSTOMER PERSPECTIVE (Mobile banking app user)	COMPANY PERSPECTIVE (Service Provider /Bank)	Reason for Gap
Micro-Level Service Gaps			
Information Gap	Desired Value	Intended Value	Bank lacks information about its customers' desires in a mobile banking platform
Design Gap		Designed /Redesigned Value ⇅ Intended Value	Bank has technical restraints from an app development standpoint, lack of effective communication between research and party responsible for developing the mobile banking app
Compromise Gap	Desired Value ⇅ Expected Value		The customer has no other choices but to use the mobile banking app provided by the bank or not use service at all
Perception Gap	Expected Value	Designed Value	Regarding the value provided by the mobile banking app, the customer's perception may differ from the bank's
Platform Optimization Gap		Redesigned Value ⇅ Received Value	Mobile banking app developers have a responsibility to ensure customers can use the app on their devices. Lack of platform optimization represents a gap between designed and received values
Customer Participation Implementation Gap	Expected Value ⇅ Received Value		Customer involvement can influence received value. Lack of customer involvement represents a mismatch between expected and received values.
Service Recovery Gap (newly identified gap)		Redesigned Value ⇅ Received Value	When banks fail to meet the customer's values, resulting in dissatisfaction, Banks must perform service recovery to keep customers. Failing to do so could result in the service recovery gap.
Word of Mouth Gap (newly identified gap)	Received Value ⇅ Expected Value		When customers feel that the mobile banking application has not provided their expected values, they may spread negative word of mouth, potentially lowering future usage rates by other customers and confirming their own opinion of the service.

Service Gaps	CUSTOMER PERSPECTIVE (Mobile banking app user)	COMPANY PERSPECTIVE (Service Provider / Bank)	Reason for Gap
TABLE 3: Mobile Banking Self-Service Gaps (Continued)			
Macro-Level Service Gaps			
Capability Gaps	Desired Value ⟷	Designed/ Redesigned Value	Bank has a capability gap in designing a mobile banking platform that matches customer desires and the expected value perceived by the customer
	Expected Value ⟷	Intended Value	The customer has a capability gap in providing information on their desires and their perception of the value provided to the bank.
Satisfaction Gaps		Designed/Redesigned Value ↕ Received Value	The bank is satisfied/dissatisfied with the mobile app based on its criteria of success of implementation and customer perceptions
	Expected Value ↕ Received Value		Customer is satisfied/dissatisfied with the mobile banking app based on their perception of the service quality and whether or not it meets their expectations

Anitsal and Flint (2008) described the gaps discussed thus far as micro-level service gaps. It is also beneficial to examine gaps at a macro level. *The capability gaps* represent the gaps between the bank's designed value and the customer's desired value, as well as the bank's intended value and the customer's expected value. The bank has a capability gap in matching customer's desires and the customer's expected value. The bank has the responsibility to design an application that matches, as close as possible, to the customer's desired values from the mobile application. Developing an application that closely matches the customer's desires would lead to the customer's expected value being met. The same logic is applied to customers. Customers also have a capability gap in providing the bank with their realistic desires and providing feedback on their perceptions of the application designed. For example, a bank may intend the mobile application to be easier than going to a physical location. Still, some customers may see the application as more complicated and less convenient than going to a branch. One customer of the Wells Fargo mobile banking application puts it this way "I don't always have time to run around and head to the bank. Which is why I downloaded the app in the first place. But it's not convenient at all" (Apple, 2019). This customer experienced a more inconvenient experience than going to the branch.

The second set of macro-level service gaps are *the satisfaction gaps*. Anitsal and Flint (2008) proposed one satisfaction gap, consisting of satisfaction for the bank and the customer. For the bank, this gap occurs between the customer's received value and the bank's designed value. This is when the bank is satisfied with the service based on its criteria in delivering superior customer value and mobile banking performance. For the customer, the satisfaction gap occurs between the customer's expected value and the received value. The customer's satisfaction gap

happens when the customer is satisfied or dissatisfied with the mobile banking application based on their evaluation of the consumption experience and whether the service meets their expectations.

This paper proposes the idea of two new micro-level service gaps. In the world of online banking today, it is vital that banks meet the needs and expectations of their customers (Berrocal, 2009) and continually updates their services to meet these needs. *The service recovery gap* is between the customer's received value and the redesigned/designed value of the bank and occurs when a bank fails to deliver a product that meets the needs and values of the customers using the product, resulting in dissatisfaction from the customer. This induces the need for the bank to go back and redesign its product. Mobile applications can be updated with new services, designs, and bug fixes. Service recovery can result in higher satisfaction for the bank due to making the customer happy. Failing to perform service recovery can result in a service recovery gap and a loss of customers. Redesigning the application based on feedback could result in a gain of customers and higher satisfaction. This redesigned value ties back to Ghani's (2017) updated TAM. An aspect of E-customer service is listening to customer suggestions or complaints and updating your product accordingly.

The second gap proposed in this paper is *the word of mouth gap.* This gap occurs when the received value of the mobile banking app fails to meet the needs of the customer. When related to Dahbolkar's TAM model (2002), the customer did not perceive the TBSS, online banking in this case, to be easy to use, performance-enhancing or reliable, or fun to use and thus, found dissatisfaction in the technology. As a result, the customers may spread negative word of mouth through various mediums. They potentially decrease future usage rates amongst other customers, confirming their low opinion of the service. All these may eventually cause a widespread disregard of the service despite any updates. The new gaps can be seen below in Table 3. The customer value model proposed by Anitsal and Flint (2008) has been updated, including the newly identified gaps, and is shown in Figure 1.

This paper's discussion indicated that the customer value model will be helpful in the mobile banking context and introduced two new gaps into the model. These new gaps, service recovery gap, and word of mouth gap aim to expand the customer value model for this context and possibly for others. The next section of this paper will discuss managerial implications and future research avenues for the above discussed.

Managerial Implications and Future Research Avenues

Technology, primarily TBS-related applications, has been quickly permeated to day-to-day service activities and changing the servicescape. This application of the customer value model to the mobile banking context can benefit bank managers and other marketers in the service industry. First and foremost, this new context allows bank managers to understand better their customer's needs and values related to mobile banking. Dabholkar's study (2002) indicates that customers adopt technology-based self-service for usability, performance, and enjoyment of use. Managers need to make sure that their mobile banking app can be successfully adopted and valued, and easy to understand and use. The application needs to have the capabilities that customers deem valuable, and it needs to be an enjoyable experience. The mobile banking app needs to meet those values to ensure maximum satisfaction. Another study by Anitsal and Fairhurst (2002) talks about customer participation and co-creation. Customers gain a higher sense of value in the service process if they

are involved in the service's co-creation. For managers, this means that creating a mobile banking platform that allows customers to feel as though they are productive for themselves will result in higher satisfaction.

As Anitsal and Flint (2008) initially proposed, the capability gaps help managers define both customers' and banks' responsibility. The banks' responsibility is to ensure that their designed mobile banking app matches the customers' desired values as closely as possible. It is the customers' responsibility to provide realistic feedback on their expectations regarding a mobile app. When both of these responsibilities are upheld, the value designed by the bank should closely resemble the values expected by the customer.

Managers will also need to understand how customer feedback and word of mouth can impact their application's perceived value. Due to popular smartphone devices having an easy way for customers to review applications, customer voices have recently been heard louder than ever before. For banks, there is an almost endless supply of customer feedback. For customers, it means that they can easily see how other customers feel about the application. Banks best utilize this information, and they need to be willing to make changes to their application based on customer feedback.

The feedback they are looking for is in app reviews, customer complaints, or even social media posts. Future research could test how app usage has increased or decreased in conjunction with sentiment analysis of customer reviews and how that has changed from update to update. This type of research would allow bank managers to judge how their updates have affected the sentiment of word of mouth.

It is the understanding of most customers that they will be listened to when they give feedback. When that feedback is responded to positively, whether that be responses or changes, the customer may spread positive word of mouth or leave a good review for other customers to see. Ghani's (2017) research has shown that good customer service has led to higher satisfaction and higher usage and adoption of TBSS options. When potential customers see positive reviews from other customers, adoption rates will most likely increase. However, if customers feel that their feedback is ignored or declined, banks should expect negative word of mouth and a loss of customers or their application. To prevent this loss, bank marketers and app developers need to be constantly aware of their product's perceived value and adjust accordingly. A relatively cheap and effective way to monitor this perceived value is to include a feedback system within the TBSS. If a customer runs into a problem, they can easily report it, and the company can easily see if something went wrong. Future research could empirically test a key performance indicator, such as downloads, daily usage, or user reviews against update frequency or maintenance rate.

Future research could apply the updated customer value model to other contexts from mobile banking. Self-service investing apps have gained popularity recently, introducing many people into the stock market that potentially wouldn't have otherwise begun investing. Research could be done in applying the customer value model to SST investing applications. The proposed third model could also be used in sectors that do not involve finance but have mobile applications or other self-service forms such as ride-sharing applications, food ordering, delivery, or mobile shopping. With the service industry rapidly changing to include more SST and TBSS options, the implications for this research are numerous in that it can be applied to more than just mobile banking. The newly proposed gaps in this paper provide a new perspective on the industry and pave the way for future research in other sectors.

FIGURE 1: Extended Customer Value Model in The Context of Mobile Banking
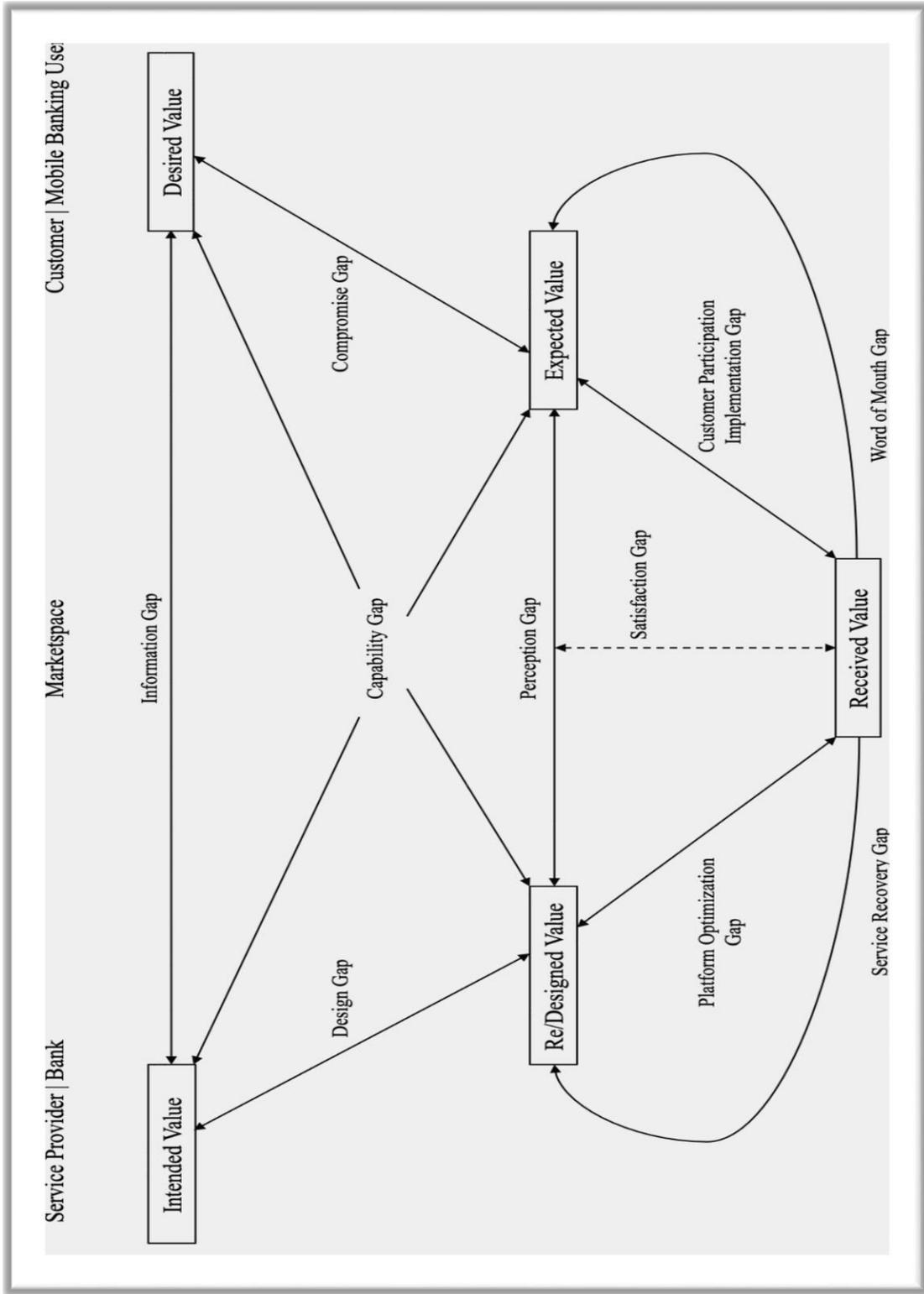
Conclusion

This study presents an opportunity for bank marketers and managers to better understand why their customers choose to adopt mobile banking and what types of values might be necessary when designing a mobile banking platform. The literature review has shown that self-service technology is typically adopted in a consistent pattern following what the customer deems valuable in an SST. The customer value model provides an overview of an SST's value from the customer's perspective and the business. When discussing the extended model proposed in mobile banking, two new gaps have been added. These gaps aim to introduce customer word of mouth and company service recovery into the model. Future empirical evidence in mobile banking will be required to test the new additions to the proposed model. Future research also would help validate the discussion presented here and open the door for future discussion and model expansion.

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