WHICH WAY THE USERS PREFER? MOBILE BANKING OR COMPUTER ONLINE BANKING – AN EMPIRICAL STUDY

Chiang-nan Chao, St. John's University
Khalid M. Dubas, University of Mount Olive

ABSTRACT

Mobile banking has reinvented the banking industry to a new level of mobility. It is a challenge to the banking industry to better prepare for its future to meet the increasingly changing demands of its customers. This empirical study investigates bank customers' preferences between mobile banking and computer online banking and offers some insights for the banking industry to better serve its customers. The results indicate that the respondents significantly prefer mobile banking over computer online banking on several salient attributes. Specifically, the respondents believe that mobile banking, compared with computer online banking, is more reliable, dependable, accurate, and easy to carry around. The findings suggest that the market for mobile banking will continue to expand. So, there is a need for the banking industry to continue to engage its customers 24/7 and to further develop mobile banking to offer high quality services to its customers.

Keywords: *Marketing mobile banking, Management of Mobile banking, Computer online banking, E-commerce, M-commerce*

INTRODUCTION

American consumers started making their purchases via online banking when Internet became available more than two decades ago. At the beginning, e-commerce transactions were largely handled by computers and/or tablets, and the transactions were settled mostly via consumers' debit and/or credit cards, or directly from consumers' bank accounts. Banks were considered pioneers in the digitalization of the banking services.

Since Apple introduced smartphone (Apple, 2007), American consumers have begun using their mobile phones to handle their purchases as numerous mobile applications (APPs) became available from banks, high tech companies, and merchants. The banking industry has experienced rapid and widespread changes due to new technologies like immediate payment infrastructures and blockchains. Mobile applications are creating novel ways for banking activities where consumers can enjoy added values. Consumers' needs for value added banking services are evolving as more and more transactions have taken place on mobile phones, providing real-time, personalized, and seamless payment experiences (Komulainen & Saraniemi, 2019). The mobile banking showed an impressive growth of 41% from $69.8 billion in 2018 to

$98.8 billion in 2019 in the U.S. This progress was magnificent as compared with only $12.8 billion mobile transactions in 2012. American consumers are now becoming increasingly comfortable with mobile banking technology, and this could have been a catalyst for higher mobile-commerce sales (Kohan, 2020). This shift in the mode of banking, from computers to mobile devices, is revolutionary and the subject of this research. This study is designed to gain a better understanding of the criteria or salient attributes that banking services users consider when choosing mobile banking versus computer online banking. The findings should help the banking industry to improve its services in the future.

LITERATURE REVIEW

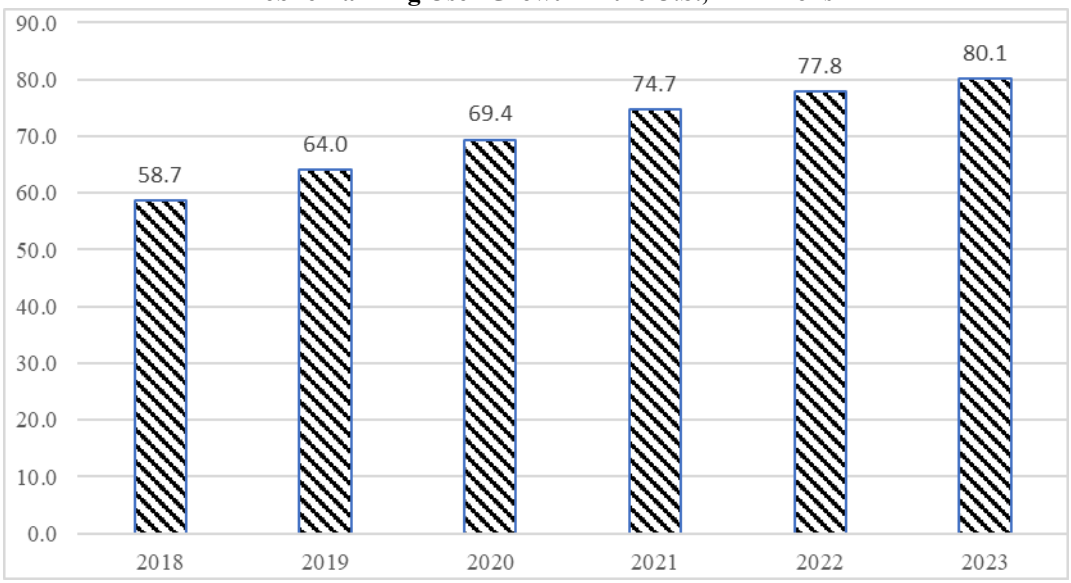
Historically, barter trades served as means of exchanges. Precious metals, like gold and silver, largely replaced barter trades. Cash, cheques and/or bank drafts became dominant methods for purchasing good and services for centuries. Around 1950s, credit cards were introduced which offered an easy way for purchase transactions. Computer online banking started around 1994 in the U.S. It offered 24/7 and remote banking service for consumers on the internet, while the transactions were largely done through credit and/or debit cards, as well as through consumers' bank accounts (Woods, 2014). The growth of computer online banking market has been robust, as it has a 35% cost advantage over a traditional bank branch, and most of the banks charge no fee for their online banking transactions (Taylor, 1999).

The mobile banking services were first introduced around 1999 in the U.S. At the beginning, it used short message service, known as SMS banking. Smartphones and Wireless Application Protocol (WAP) enabled consumers to use the mobile web to manage their banking activities (Apple, 2007). Some of the European banks quickly started to offer mobile banking platform to their customers (Mobile banking, Wikipedia, 2022).

There are about 3.5 billion smartphone users around the world currently while only about 2 billion computer/tablet users. Smartphones have been adopted by more than 85% of the US population, with a total of 276 million users (Statista, 2021). Mobile banking has kept up with growing social trends and technology, shifting to meet customer needs, and competition. As a result, consumers can conduct their banking activities via their smartphones more conveniently. Widespread adoption of smartphones has further increased consumers' E-commerce experiences (Electronic Transactions Association, 2019). Mobile banking has offered additional values to consumers in terms of ease, speed, convenience, and cost. Computer online banking offers 24/7 availability. Mobile banking provides higher mobility than computers and tablets. Younger American consumers are the driving force for the growth of mobile banking. They are motivated in part by rewards or loyalty programs offered by mobile APP providers and more ready to accept the benefits of mobile banking. At the same time, many consumers prefer traditional debit and credit card operations, and remain skeptical about mobile banking since they have persistent concerns about privacy, accuracy, and security (Kim, et al, 2018).

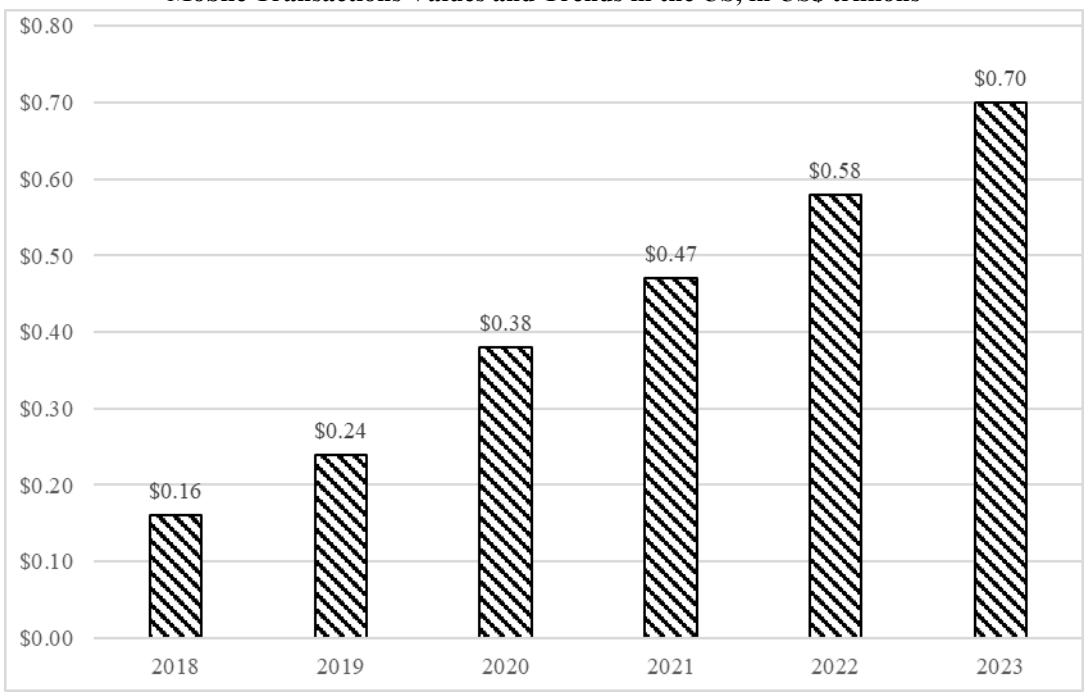
Both the number of mobile users and the value of mobile transactions have been increasing over time. Figure 1 presents the growth of mobile banking user in the U.S. while Figure 2 presents mobile payment transaction value increases in the U.S.

Figure 1
Mobile Banking User Growth in the U.S., in millions



Source: Statista report, 2021. Retrieved from https://www.statista.com/statistics/244487/number-of-us-proximity-mobile-payment-transaction-users/

Figure 2
Mobile Transactions Values and Trends in the US, in US$ trillions



Reconstructed based on Statista, March 2022. Retrieved from https://www.statista.com/outlook/dmo/fintech/digital-payments/mobile-pos-payments/united-states#transaction-value

A noticeable difference between mobile banking and computer online banking is that smartphones are in the consumers' pockets wherever they go, while computers are mostly stationed. For overwhelming majority of mobile transactions, consumers connect their bank accounts or credit/debit cards to the mobile APPs, or funds are stored directly on APPs, such as mobile wallets or person-to-person payment APPs. Yet, the infrastructure that underpins these transactions is largely the same, both use the same underlying financial systems through which funds are guaranteed and requested—such as Visa and Mastercard networks, which enable credit/debit card payments. The Automated Clearing House together with paying banks, processes, facilitate and direct transfers between depository accounts. The payments are subject to all the protections against frauds and losses of funds. Prepaid cards also provide protections against unauthorized charges and ensure that consumers have the right to dispute such transactions (The Pew Charitable Trusts, 2019).

Some researchers have investigated mobile banking in the developing countries. Trabelsi-Zoghlami, et al. and Shankar, et al. examine the service quality in mobile banking using generic service quality scales to ascertain the most appropriate one in India. Their study collects views of mobile banking users and concludes that no measurement scale is suitable to measure mobile banking service quality. Nevertheless, their study provides the managers of financial institutions with some clear insights into consumers' service quality expectations of mobile banking (Trabelsi-Zoghlami, et al., 2018; Shankar, et al., 2019). The research conducted by Shankar, et al. also evaluates the mobile banking service quality issues in India (Shankar, et al., 2020). The work by Baabdullah, et al. concentrates on mobile banking adoption in Saudi Arabia. Perceived privacy and perceived security are the two major factors that affect user adoption of mobile banking (Baabdullah, et al., 2019). Mouakket investigates mobile payment quality characteristics in the United Arab Emirates. The study concludes that system quality, information quality and service quality can influence expectations about performance and effort of this technology (Mouakket, 2020). Shams, et al. center on customer's adoption of mobile banking that portrays tremendous growth in Iran. Their study explores the customer's mobile banking experiences and expectations among different generations X, Y, and Z. Their methodology is through in-depth interviews of active users of mobile banking services with a generational split in Iran (Shams, et al., 2020). Mostafa investigates the potential effects of mobile banking service quality dimensions on customers' value co-creation intention (CVCCI) in the banking sector in Egypt (Mostafa, 2020).

Glavee-Geo, et al. survey 595 mobile banking users in Ghana. Their study highlights the implications of mobile money services to business and marketing/service managers, policy makers, non-banking entities, such as telecoms and financial technology firms, and to the society in general. They provide important insights into how service providers can manage consumer engagement process and formulate marketing strategies to target and promote this simple, but innovative service to consumers. They discuss the societal implications of the study in Ghana and recommend several options for future studies to stimulate the research agenda on general mobile banking (Glavee-Geo, et al, 2019).

The above studies on mobile banking provide useful insights and indicate that factors or salient attributes such as quality, accuracy, security, and privacy are of concern to banking services users. Other researchers have also studied mobile banking related features. Shankar, et al. explore the key dimensions of mobile banking service quality. They use two qualitative methods for their data collection, i.e., focus group, and in-depth interviews. Their results demonstrated that privacy, security, customer support, interactivity, efficiency, and content were the key quality dimensions. They believe that their findings provide useful insights for developing mobile banking service quality. Practically, the findings will help banks understand consumers' expectations, and provide directions for improving quality of m-banking services (Shankar, et al., 2020).

Forrester Research predicted in 2015 that mobile wallets would become a marketing platform by 2020, with expectation of growing adoption. Yet, this prediction is not currently materializing. The U.S. mobile banking facilitators, like Apple Pay or Google Wallet have not yet offered any platform rich enough to engage American consumers. In fact, Apple Pay was losing its customers. The authors of this research wonder why and what mobile baking facilitators need to know to improve their services for American mobile banking customers (Augustine, 2018).

In summary, the review of literature provides a wide range of aspects of American consumers' perceptions for mobile banking. This empirical study investigates American consumers' preferences in their banking activities between mobile banking and computer online banking. This should generate insights in terms of effectiveness, efficiency, and service quality issues. The findings of this study offer useful insights to marketers in their future marketing endeavors.

METHODOLOGY

This study focuses on American consumers' preferences for mobile banking with respects to the effectiveness, efficiency, and quality of mobile banking vs. computer online banking. A survey questionnaire was designed to identify and investigate those issues that were important for the consumers and banking industry.

Salient Attributes of Banking

Research Question 1: What are the salient attributes of banking?

The literature review identified eleven salient attributes of banking (Augustine, 2018; Baabdullah, et al., 2019; Chao & Dubas, 2022; Glavee-Geo, et al, 2019; Kim, et al, 2018; Mostafa, 2020; Mouakket, 2020; Shankar, et al., 2019; Shankar, et al. 2020; The Pew Charitable Trusts, 2019; and Trabelsi-Zoghlami, et al., 2018) as given below.

1. ***Reliability***
2. ***Dependability***
3. *Help **accurately** manage my account activities*
4. *Help **safely** manage my account activities*
5. ***Security** for transactions*
6. ***Easy to use***
7. *Help me **timely** manage my accounts*
8. *It is **convenient** for making payments and/or transfer money*
9. *It is **easy to carry** around for my banking activities*
10. *Provides **free transactions** for me*
11. *I feel more **comfortable** to use*

Mobile Banking vs. Computer Online Banking

Next, two modes of banking are evaluated on the above eleven salient attributes.

Research Question 2: How do mobile banking and computer online banking compare in terms the salient attributes of banking?

This research question was answered by performing eleven paired t-tests to compare banking users' evaluations of mobile banking and computer online banking on eleven salient attributes

Sample

The targeted sample respondents were college students in a large university in the northeast of the U.S. One-page survey questionnaires were distributed to target respondents, specifically with the aim of obtaining the opinions of the respondents who are often exposed to both computer online banking and mobile banking.

Hypotheses

The null hypotheses state that there is no significant difference between the respondents' ratings of mobile banking and computer online banking for all eleven salient attributes of banking. The alternative hypothesis state that there is a significant difference between the respondents' ratings of the two modes of banking for all eleven salient attributes of banking. These eleven alternative hypotheses are given below:

*Hypothesis 1: There is a significant difference in **reliability** between mobile banking and computer online banking.*
*Hypothesis 2: There is a significant difference in **dependability** between mobile banking and computer online banking.*

*Hypothesis 3: There is a significant difference in **accurately managing** banking activities between mobile banking and computer online banking.*
*Hypothesis 4: There is a significant difference in **safely managing** banking activities between mobile banking and computer online banking.*
*Hypothesis 5: There is a significant difference in **securely banking transactions** between mobile banking and computer online banking.*
*Hypothesis 6: There is a significant difference in **easiness for users** between mobile banking and computer online banking.*
*Hypothesis 7: There is a significant difference in **timely** fashion in managing user accounts between mobile banking and computer online banking.*
*Hypothesis 8: There is a significant difference in **conveniently** making payments and/or transfer money between mobile banking and computer online banking.*
*Hypothesis 9: There is a significant difference in **easiness for carrying** device around for banking activities between mobile phone and computer online banking.*
*Hypothesis 10: There is a significant difference in the **users' transaction fees** between mobile banking and computer online banking.*
*Hypothesis 11: There is a significant difference in **user's comfortability** between mobile banking and computer online banking.*

The respondents were asked to give their preferences over these paired variables: mobile vs computer online banking. A five-point Likert scale is applied, with 5 = strongly preferred, 4 = preferred, 3 = neutral, 2 = not preferred, 1 = least preferred. So, the paired *t-test* is appropriate to test if there is a statistically significant difference in respondents' preference between the two modes of banking. If the significance level is less than or equal to 5%, then null hypothesis should be rejected since there is support for the alternative hypothesis (Conover, 1980; Davis & Cosenza, 1985; Hamburg, 1977; IBM SPSS, 2021).

RESULTS

Seven hundred twenty questionnaires were distributed to college students and staffs in a large university in the northeast of the U.S., of which two hundred fifty-two were returned and used in the study. This represents thirty-five percent response rate. Table 1 presents demographic information about the respondents.

Table 1
Background Information of the Respondents

Age	Frequency	Valid Percent
<18	35	13.9
19-35	214	84.9
36-50	3	1.2
Gender		
Male	129	51.2
Female	123	48.8
Family income		
<$35k	31	12.3
$35-50k	40	15.9
$50-70k	52	20.6
>$70k	129	51.2
Education level		
College	238	94.4
Graduate	14	5.6
Marital status		
Married	41	16.3
not married	211	83.7

Table 2 presents respondents' years of using mobile banking and computer online banking.

Table 2
Respondents' Experience with Mobile Banking and Computer Online Banking

Years using mobile banking	Frequency	Valid Percent
1 yr	16	6.3
2 yrs	70	27.8
3 yrs	93	36.9
>4 yrs	73	29.0
Years using computer online banking		
1 yr	20	7.9
2 yrs	85	33.7
3 yrs	78	31.0
>4 yrs	69	27.4

Table 3 shows *t-test* results. Nine out the total eleven null hypotheses were rejected since their significance levels were less than 5%. So, the respondents' indicated significant differences in their preference between mobile banking and computer online banking on these nine salient attributes. The significance levels more than 5% for two hypothesis tests so for these two attributes, the respondents were indifferent between mobile and computer online banking.

Table 3
The Paired t-Tests: Compare Mobile Banking vs. Computer Online Banking

Salient Attributes	*u* diff.	*t*	*df*	*Sig. (2-tailed)*	*Result*
1. It is **reliable** to manage my banking activities on phone	0.190	3.209	251	0.002	Supported
2. It is **dependable** to manage my banking activities on phone	0.108	2.054	250	0.041	Supported
3. It is **accurate** to manage my banking activities on phone	0.282	5.267	251	0.000	Supported
4. It is **safe** to manage my banking activities on phone	0.127	2.215	251	0.028	Supported
5. It is **secure** to manage my banking activities on phone	0.044	0.746	250	0.456	Not Supported
6. It is **easy to manage** my banking activities on phone	0.357	5.705	251	0.000	Supported
7. It is **timely to manage** my banking activities on phone	0.337	4.945	251	0.000	Supported
8. It is **convenient** to manage my banking activities on phone	0.448	6.937	251	0.000	Supported
9. It is **easy to carry** my phone around to manage my banking activities	0.889	9.423	251	0.000	Supported
10. It is **free to manage** my banking activities on phone	0.159	1.830	251	0.068	Not Supported
11. It is **comfortable** for me to manage my banking activities on phone	0.425	4.712	251	0.000	Supported

MANAGERIAL IMPLICATIONS AND RECOMMENDATIONS

The paired *t-test* results rejected nine out of the eleven null hypotheses; therefore, the study concludes that there are statistically significant differences from the respondents' viewpoints between mobile banking and computer online banking in these nine hypotheses. A look at Table 3 indicates that all effect sizes (representing mean differences) and t-values are positive. This indicates that respondents preferred mobile banking over computer online banking in terms of their *reliability*; *dependability*; help in *accurately managing user account activities; safely managing user account activities*; *easy to use*; *timely managing user accounts*; *convenience in making payments and/or transferring money*; *ease of carrying around* for banking activities; and *feeling more comfortable*. Users preferred mobile banking over computer online banking on nine salient attributes because of advancement in mobile APP technology and acceptance of mobile banking at merchants' sites.

Thus, mobile banking has emerged as a formidable way for consumers' banking activities, as it offers not only reliable, dependable, accurate and safe transactions, but also is easy to use and to carry around for consumer to manage their banking activities in a timely fashion. Moreover, the respondents favor mobile banking for making payments and/or to transfer money rather than using their computer online banking as many respondents indicated that they carry their smartphones in their pockets and can manage their banking activities more conveniently. In addition, some of the respondents said that they can be informed in a timely fashion of the important banking activities at anytime and anywhere.

It is worthwhile to note the support for *Hypothesis 9: It is easy to carry around for my banking activities* since the respondents prefer using mobile phones over stationed computers. Mobile banking offers flexibility and convenience that computer online banking may not offer, as consumers cannot carry their computers and make the payments where they go. Through mobile banking APPs, geographical barriers are no longer as limits for consumers to conduct their banking activities. This convenience also helps other consumers activities such as selling products online, transferring money to family or friends overseas, and accessing their banking accounts while traveling. Mobile fintech allows consumers to make transactions on the go and consumer can quickly stop potential fraud or rectify a mistaken transaction. These transactions are also easy to view on mobile applications since customers can have real-time access to their bank accounts and recent transactions. All these materialize the banking activities into consumers' palms.

This study did not provide support for two hypotheses: *5. Security for transactions,* and *10. Provides free transactions for users* between mobile and computer online banking. For *Hypothesis 5. Security for transactions,* the respondents expressed that they equally preferred both mobile banking and computer online banking. They also stated that both credit/debit card issuers, banking industry, as well high-tech companies, like Apple, keep improving their infrastructure for more secured transactions. They also say that to a large extent it is the IT infrastructures that provide secured transactions. For *Hypothesis 10. Provides free transactions for users*, the respondents, as consumers, do not pay for the transaction processing fees, while the merchants (for the most part) and banking industry bear the transaction costs. Such transaction processing fees range between 1.3% to 3.4% can be burdensome to merchants particularly. The lack of support for these two hypotheses may **not** suggest that the banking industry can keep escalating transaction fees. Some respondents indicated that merchants were less likely to accept some bank cards like the American Express, than other cards.

From traditional face-to-face banking to computer online banking and to mobile banking, the banking industry is being reinvented to a new dynamic level during the pandemic in 2020. Processing payments becomes an essential source of revenue for financial institutions, and it also helps consumer engagement during the transactions when physical mobility is restricted. On the other hand, the pandemic has slashed payment revenues due to sharply curtailed economic activities. The findings suggest that mobile banking will continue to expand its usership as the continuous improvements of mobile APP technology and growth of smartphone user population in the U.S. At the same time, both mobile banking and computer online banking will continue to accommodate each other for a better consumer digital banking experience. The banking industry continues to push the mobile banking further and engage their customers 24/7.

LIMITATIONS AND FUTURE RESEARCH

This study reveals the preferences between mobile banking and computer online banking. The results offer some glimpses for the banking industry as how the consumers can be better served. Due to the preliminary and exploratory nature of this research, however, caution should be exercised when trying to generalize the results of this study.

This study has several limitations:

1. The sample size is small.
2. Not all mobile and computer online banking features are explored. For example, features like handling mortgage transactions, borrowing loans, and several payment related matters are not considered here.
3. The respondents are mainly college students who naturally cannot represent the general population, i.e., their banking activities are usually narrow in scope as they are mostly part-time workers and earn less money than full-time workers.

A comparative study of mobile banking between USA and some developing countries, like China, India, or other Asian countries, may offer insights about the future of global mobile banking. Surane and Cannon (May 23, 2018) note that most payments go through consumers' credit/debit cards in the U.S., whereas in China, mobile banking is more effective and efficient. In China, some big IT giants are the driving engines for mobile payments. Ant Group's Alipay and Tencent's WeChat Pay, respectively, have 520 million and over a billion active monthly users in the world. These IT giants serve as facilitators and intermediaries to connect consumers, banks, and merchants. These transactions use two dimensional codes (QR) for processing and verification and lead to disintermediates of banks and credit card issuers from payment transactions. This deprives banks and credit card issuers of an important and long-standing source of revenue. The mobile banking payment users link their mobile wallets with service providers' payment system and the bank accounts for payment transactions. When the consumers make purchases, the merchants use their smartphones to scan consumers' QR codes or vice versa, the mobile payment system providers transfers payments either from mobile wallets or from consumers' bank accounts to the merchants. Credit cards are not involved for the transactions. In addition, the mobile payment systems may also offer their customers credit lines so that the users can charge their purchases on their credits without plastic credit cards. These operations offer a highly effective way to increase in-store conversion rates and serve as channels for future engagements between consumers and merchants. For example, mobile wallet's dynamic nature means marketers can reactivate or update a pass remotely once it's installed; they can add the latest offers or notify users of a flash sale. These mobile payment systems charge transaction fees of about 0.3% of the purchased amount, as compared to about 3% by many credit card companies in the U.S. and other parts of the world. As a result, the merchants enjoy low processing costs that translate to their bottom lines (Mosteller, 2020).

The academic research on mobile banking and computer online banking is still limited and the banking industry still needs to know how to serve their customers better. This study indicates that future research should be in the areas of mobile banking quality and security that are the keys for the future growth of mobile banking. Further in-depth research should delve more into the factors and elements that predict the effectiveness and efficiency of mobile banking and computer online banking. Would consumers eventually abandon using their computer online banking in the future, as some of the respondents commented that they only use their smartphones to manage their banking activities? Does the younger generation differ from the older generation since younger people spend more time on their smartphones? Will the

plastic credit/debit cards disappear or eliminated in the future? What do the financial institutions need to prepare and conduct business when transactions occur in a cardless future market?

REFERENCES

Apple, (2007). Retrieved from https://www.apple.com/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone/

Augustine, K. (2018). Mobile Payments Use in the U.S. Lags, *Payments Journal,* June 19, 2018. Available at: https://www.paymentsjournal.com/mobile-payments-use-in-the-u-s-lags-2/

Baabdullah, A. M., Alalwan, A. A., Rana, N. P., Patil, P., & Dwivedi, Y. K. (2019). An integrated model for m-banking adoption in Saudi Arabia, *International Journal of Bank Marketing*, April 1, 2019, Vol. 37 No. 2, pp. 452-478.

Chao, Chiang-nan and K. M. Dubas (2022), "What Bank Management Needs to Know about American Mobile Banking Users," manuscript under review at the *Global Journal of Marketing Management.*

Conover, W. J. (1980). *Practical Nonparametric Statistics*, 2nd ed., New York: John Wiley & Sons, pp. 213-337 & 344-384.

Davis, D., & Cosenza R. M. (1985). *Business Research for Decision Making*. Boston: Kent Publishing.

Electronic Transactions Association, (2019). Retrieved from https://www.electran.org/publication/transactiontrends/new-eta-report-the-state-of-mobile-payments-in-2019/

Glavee-Geo, R., Shaikh, A. A., Karjaluoto, H., & Hinson, R. E. (2019). Drivers and outcomes of consumer engagement: Insights from mobile money usage in Ghana, *International Journal of Bank Marketing*, July 18, 2019, Vol. 38, No. 1, pp. 1-20.

Hamburg, M. (1977). *Statistical Analysis for Decision Making*. San Diego: Harcourt.

IBM SPSS Exact Tests, (2010). SPSS Inc.

Kim, M., Zoo, H., Lee, H., & Kang, J. (2018). Mobile financial services, financial inclusion, and development: A systematic review of academic literature, *The Electronic Journal of Information System in Developing Countries*, 27 July 2018. Retrieved from https://doi.org/10.1002/isd2.12044

Kohan, S. E. (2020). Fueled by increased consumer comfort, mobile payments in the U.S. will exceed $130 billion in 2020, *Forbes*, March 1, 2020. Retrieved from https://www.forbes.com/sites/shelleykohan/2020/03/01/fueled-by-increased-consumer-comfort-mobile-payments-in-the-uswill-exceed-130-billion-in-2020/?sh=7c099f7c44f2

Komulainen, H. & Saraniemi, S. (2019). Customer centricity in mobile banking: a customer experience perspective, *International Journal of Bank Marketing*, Vol. 37 No. 5, pp. 1082-1102.

Mobile banking, Wikipedia, (2022). Retrieved from Mobile banking - Wikipedia

Mostafa, R. B. (2020). Mobile banking service quality: a new avenue for customer value co-creation, *International Journal of Bank Marketing,* May 10, 2020, Vol. 38, No. 5, pp. 1107-1132.

Mosteller, A. (2020). Can You Charge Your Customers a Credit Card Processing Fee? www.business.org, on May 26, 2020. Retrieved from https://www.business.org/finance/payment-processing/credit-card-convenience-fees/

Mouakket, S. (2020). "Investigating the role of mobile payment quality characteristics in the United Arab Emirates: implications for emerging economies", *International Journal of Bank Marketing*, , Vol. 38 No. 7, pp. 1465-1490.

Shams, G., Rehman, M. A., Samad, S., & Oikarinen, E. L. (2020). Exploring customer's mobile banking experiences and expectations among generations X, Y and Z, *Journal of Financial Services Marketing*, May 26 2020, Vol. 25, pp. 1–13.

Shankar, A., Datta, B., & Jebarajakirthy, C. (2019). Are the Generic Scales Enough to Measure Service Quality of Mobile Banking? A Comparative Analysis of Generic Service Quality Measurement Scales to Mobile Banking Context, *Services Marketing Quarterly*, 2019, Vol. 40, Iss 3, pp. 224-244.

Shankar, A., Datta, B., Jebarajakirthy, C., & Mukherjee, S. (2020). Exploring Mobile Banking Service Quality: A Qualitative Approach, *Services Marketing Quarterly*, May 7, 2020, Vol 41, Iss 2, pp. 182-204.

Statista, (2021). Retrieved from https://www.statista.com/statistics/244487/number-of-us-proximity-mobile-payment-transaction-users/

Statista, (2022). Retrieved from https://www.statista.com/outlook/dmo/fintech/digital-payments/mobile-pos-payments/united-states#transaction-value

Taylor, P. C. (1999). Big Trends in Community Banking for 2000, *America's Community Banker*, Vol. 8 No. 3, March 1999, p. 17.

The Pew Charitable Trusts, "Finally, Robust Protections for Prepaid Accounts" (2019), Retrieved from https://www.pewtrusts.org/en/research-and-analysis/articles/2019/05/31/finally-robust-protections-for-prepaid-accounts

Trabelsi-Zoghlami, A., Berraies, S. & Yahia, K. B. (2018). Service quality in a mobile-banking-applications context: do users' age and gender matter? *Total Quality Management & Business Excellence*, 02 July 2018.

Woods, L. (2014). How Online Banking Evolved Into a Mainstream Financial Tool, *Motley Fool*, Retrieved from https://www.fool.com/investing/general/2014/11/09/how-online-banking-evolved-into-a-mainstream-finan.aspx

Surane, J. & C. Cannon (May 23, 2018), "Why China's Payment Apps Give U.S. Bankers Nightmares." Retrieved from https://www.bloomberg.com/graphics/2018-payment-systems-china-usa/

Chiang-nan Chao, a Professor of Management. His publications can be found in *Journal of World Business, the Journal of Supply Chain Management, the International Journal of Physical Distribution and Logistics Management, the Journal of Strategic Marketing, the Journal of Education for Business, the Industrial Marketing Management, Organizations and People, Journal of Teaching in International Business*, etc.

Khalid M. Dubas, Professor of Marketing, University of Mount Olive. He does research in consumer behavior, retailing, business analytics, and business ethics. His most recent publication is 'Effective design and assessment of an MBA degree program through benchmarking.'