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Papers in this journal are posted online ahead of the print issue on the
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Welcome to the August 2023 issue of *QRBD*. As this issue releases, the community of scholars who contribute to and learn from this journal are busy beginning our teaching. During my own preparations for the semester, my first back in a traditional classroom since 2019, I could not help but chuckle as to the way I think of a year…not a collection of 12 months beginning right after Christmas but rather as four months, four months, other. As dedicated academics, it can be rather hard to remember that our community does not necessary travel in the same time span as the world around us; thus, the need to continue exploration of the world and expand the boundaries of our community should always be at the forefront of what we do.

This issue of *QRBD* features three research teams who are making their contribution to expanding those boundaries. First, the team of Chen, Nadler, Lu, and Hagen explore the role preventative health care plays on individual dietary decision making. Next, McCready, Abegaz, Porter, and Smatt explore the risks and rewards of popular mobile payment systems. Finally, McMahan offers findings on the role of strategic brand marketing efforts and corporate social responsibility initiatives resulting from the pandemic. Along with this research, we meet our featured reviewer Robert A. Smith who made his impact through constructive contributions to our current authors.

While our jobs may feature repeated elements from one period to another, we regularly have the excitement of new minds, new faces, and new opportunities to not only give to other people but gain from them as well. Moving forward, I encourage all readers to look at the discoveries offered in this issue and to look for new ways to push the boundaries around you. Just as our calendar is (mentally) broken into smaller pieces than the usual, so too might be contributions your ideas can make to our community.

Dr. Vance Johnson Lewis, Editor
Oklahoma City University

REVIEWER SPOTLIGHT: *Robert A. Smith*

Again, a hearty thank you to those who contributed to this issue through their insightful comments and personal investment in aiding the featured authors. While of course, we must maintain our rigorous double blind review process, it is perfectly acceptable to feature one of those unnamed reviewers for their excellent work. For this issue, we recognize Robert A. Smith.

Robert A. Smith, JD, MBA, is an Associate Professor and the Chair of the Management & International Business department at Southern Connecticut State University. Robert is licensed as an attorney in Connecticut and in the Federal District Court for the District of Connecticut and has been engaged in the practice of law for 18 years. He has co-authored several peer-reviewed journal articles and focuses his research on areas of management related to employment, labor, and human resources law, business ethics and sustainability, data security, intellectual property, and contract law. Robert has also co-authored two textbooks: *Bankruptcy Law and Practice* for Pearson Education and more recently, *Introduction to Business Law and Ethics* for Kendal Hunt Publishing Company.

What do you think are the benefits of being a reviewer?

Being asked to review for a peer-reviewed journal is a privilege and an opportunity for me to grow as an academic. I learn a great deal from reading my colleagues' work. Most importantly, being a reviewer is an opportunity to help others develop as researchers and writers while contributing to various disciplines.

What tips do you have for someone who says they do not have time to review?

For colleagues who feel they do not have time to review, I offer this advice: I often feel the same way when I am asked to review a submission. However, I remember receiving my first few constructive reviews on my own submissions and how appreciative I was for the accolades, advice, and constructive feedback. Reviewing is one of the most important types of service we can (probably should say "could") provide to our discipline and an opportunity to inspire and help our colleagues while potentially learning something new.

Again, many thanks to those who made their contributions to this issue behind the scenes through excellent reviewing. If you would like to volunteer to review, your skills can certainly be used! Please email qrbdeditor@gmail.com with your expression of willingness to contribute.

PREVENTIVE HEALTH CARE SEEKING BEHAVIOR AND IMPORTANT FACTORS ASSOCIATED WITH DIETARY BEHAVIOR AMONG BABY BOOMERS IN TAIWAN

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ABSTRACT

As society ages, the importance of preventive health care (PHC) cannot be overstated. There are many aspects associated with PHC. This study looks at the impact of PHC seeking behaviors on two dietary behaviors while controlling for demographic variables. Social influences are identified into three groups: family, peers, and professionals. Data for this study was obtained based on a convenience sample of 390 baby boomers from Taiwan and was analyzed using SPSS through stepwise regression analyses. Study findings indicate that PHC seeking behavior, income, and personal influences affect healthy and advanced choice diets, while gender was found to affect the choice of a balanced diet. Income level, PHC seeking, and Personal Influences are the three most important predictors for baby boomers' dietary behavior, i.e., balanced diet or advanced diet, in Taiwan.

Keywords: Taiwanese, Prevention Health Care, Balanced Diet, Healthy Diet, Advanced Choice Diet, Perceived Health Knowledge, Perceived Health Condition, Baby Boomers

INTRODUCTION

In recent years the healthcare industry has increasingly recognized the importance of including the individual in decisions involving personal health (Durra-Bergman, 2005; Singh et al., 2019). Prevention health care (PHC) involves preventing illnesses so that risk factors and disease burdens decrease while increasing one's quality of life. PHC has many levels and can be adopted at any point in one's life. Applying PHC can help reduce the risk of illness and help prevent worsening and increasing symptoms over time.

A key component of PHC is Preventive Health Care Information (PHCI). PHCI is distributed through a variety of platforms in order to bring awareness to consumers and businesses about health-related issues and help manage healthcare costs (Cangelosi & Markham, 1994; Wu, He, and Zhang, 2020). PHCI is most commonly distributed through healthcare professionals in professional settings or at health fairs (Glanz et al., 2012). In more informal settings, individuals receive PHCI through their peers that they are closest to or those that the individual looks up to (Rinsum et al., 2019). The healthcare industry believes that having a variety of sources allows the consumer to maintain confidentiality and increases the likelihood of PHC adoption.

PHC is also increasingly crucial to businesses because it has proven to effectively control employee healthcare costs while maintaining operational efficiency (Buttet & Dolar, 2020). Research in this area has found that, on average, between 2.5 and 4.5 percent of salary costs are spent on absent employees due to health-related issues. Buttet and Dolar (2000) also found that over half of employee healthcare claims were due to preventable causes. These statistics can vary based on the size of the company. Other research suggests that PHC adoption behaviors can help businesses decrease health claims and reduce missed workdays, increasing productivity (Danna & Griffin, 1999). Furthermore, the cost of health care in the United States currently stands at approximately 20% of the GDP (Miz et al.n, 2019).

Dietary behavior is an essential component of PHC due to the impact that diet plays on various health conditions (Bouwman et al., 2020). Dietary PHCI enables consumers to potentially make their diet a component of their PHC by enabling them to avoid foods that may worsen certain health conditions (Singhal, 2018; Chen et al., 2022). When seeking out new products, customers seek product information before deciding to purchase the product. In searching for new products, one will have to sift through various health-related information. Health-related information could include nutritional information and health warnings on the product. This information may influence both purchasing behaviors and which products consumers ultimately purchase (Chen et al., 2022). This newfound knowledge has led to an increasing desire for food that is perceived to be healthy (Bech-Larsen & Grunert, 2003; Boutin, 2008; Sahota, 2009; Rinsum et al., 2019).

This study aims to assess the impact of PHC adoption behaviors while controlling demographic and social influences. This study also considers whether PHC leads to adopting a balanced or advanced choice diet. To accomplish this study's stated goals, the theory of reasoned action was chosen as the theoretical foundation, as this theory has been used extensively in consumer choice and adoption studies. This study contributes to the literature in that it is among the few that consider PHC seeking behavior and its impacts in an Asian setting.

LITERATURE REVIEW

Theory of Reasoned Action

The Theory of Reasoned Action (TRA) was developed by Fishbein and Ajzen (1975). The Theory of Reasoned Action aims to find the relationships that arise between behaviors, beliefs, attitudes, and subjective norms. Under the TRA umbrella, individual behaviors are determined by what the individual believes about the action they intend to perform, the preconceived attitudes they hold about it, and how the individual thinks people who are important in their lives will perceive their behavior. At its core, TRA assumes that individuals are rational and self-interested; they will consciously evaluate consequences, change past beliefs, and reflect on their attitude regarding specific behaviors so that their decisions are in their best interest. Attitude is "an individual's positive or negative feelings about performing the target behavior" (Fishbein & Ajzen, 1975). Subjective norms are defined as "the person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein & Ajzen, 1975). These important others are divided into three groups: family, peers, and professionals.

Demographic Analysis

Educational Attainment: Education can help one better understand the benefits associated with adding dietary considerations to their PHC plan. Past research has found that those with more education are more likely to exercise, which is also a key element of PHC (Doyle, 1989). Increased education has also been found to lead to other healthy behaviors, such as a decreased usage of cigarettes. A report by the United States National Center for Health Statistics (2015) found that about 25.8% of adults with less than a High School degree smoke, while only 7.7% smoke with a bachelor's degree or more. Education can also be related to health regarding PHC usage, the services used, and the circumstances in which the information is used. For example, more educated individuals were also found to be more likely to search for PHCI online in order to achieve their PHC goals (Cangelosi et al., 2009; 2013; Alikari et al., 2019). These studies clearly demonstrate that more educated people believe that PHC is vital to their overall health when compared to people with less education (Senteio, 2019; Swan et al., 2019).

H1: *More highly educated individuals are more likely to adopt a balanced diet.*
H2: *More highly educated individuals are more likely to adopt an advanced choice diet.*

Income: Income is a predictor of PHC and PHCI usage. Individuals with higher incomes have been found to be heavier users of PHCI, especially in print form, more than their lower-income counterparts (Cangelosi et al., 2012; Barnes et al., 2020). Higher-income individuals have also been found to read and absorb nutritional information more readily than lower-income individuals (Nayga, 2000; Senteio, 2019). With increased PHCI knowledge, one should be more aware of the items on food labels and the impact that product ingredients have on their PHC plan. More recent research also suggests that the availability of PCHI is associated with greater PCHI understanding (Cangelosi et al., 2019; Buttet & Dolar, 2020). Income is also an important financial resource that is necessary to obtain higher quality foods. People from higher-income countries were also more likely to have healthier dietary consumption patterns (Imamura et al., 2015). Therefore, it can be said that individuals that seek out PCHI will generally be better able to understand the information on food labels, which enables them to eat healthier.

H3: *People with higher incomes are more likely to adopt a balanced diet.*
H4: *People with higher incomes are more likely to adopt an advanced choice diet.*

Employment: Employment has been found to be an essential factor in determining whether an individual adopts PHC and healthy eating behaviors. Employment often comes with health benefits (e.g., insurance), and the lack of employment could lead to a decline in access to PHC (Robert et al. Foundation, 2013). Having consistent or steady employment can lead to better PHC and, ultimately, personal health. It has also been shown that higher education is linked to employment, enabling the individual to eat a healthier diet based on their ability to read and understand nutrition labels (Nakamura et al., 2016).

H5: *People that are employed are more likely to adopt a balanced diet.*
H6: *People that are employed are more likely to adopt an advanced choice diet.*

Gender: Past research has generally agreed that gender is an important determinant in the adoption of PHC and the acceptance and use of PHCI. PHCI includes information on nutrition labels and the benefits of consuming a healthy diet. Many studies suggest that women live longer than men for various reasons (Gorman & Read, 2006). Women's longer longevity can be partly due to men having increased rates of fatal conditions, while women generally have more short-term illnesses and non-fatal conditions. Women have also been found to be greater consumers of PHCI in an attempt to control their lives and help them feel or look a certain way (Buttet & Dolar, 2020). In an attempt to gain greater control of their lives and maintain their appearance, women have also been found to be more likely to try healthier diets. Past research has also found that women use PHC more frequently than men (Thomas, 2010) and are more likely to seek and use PHCI (Cangelosi et al., 2010a). Rafferty et al. (2002) found that the quality of women's diet is significantly better than that of males. It was also confirmed by Imamura et al. (2015) that women have better diet behaviors globally. As a result, we propose that women are more likely to adopt a healthy diet and an advanced choice diet as part of their PHC.

H7: *Women are more likely to adopt a balanced diet.*
H8: *Women are more likely to adopt an advanced choice diet.*

Age: The worldwide population over 55 has increased steadily in recent years thanks to the increased longevity of the baby boom generation. Consequently, age has been found to be an essential predictor of PHC demand and can have a huge effect on those that utilize PHCI effectively (Cangelosi et al., 2010ab). The nutrition literature also finds that older adults generally have better dietary patterns and behaviors than younger adults (Rafferty et al., 2002; Imamura et al., 2015). PHCI has also been shown to have a positive effect on eating habits, the frequency and amount of exercise that individuals engage in, and ultimately whether or not people adopt health-conscious behaviors (Cangelosi et al., 2009). Not surprisingly, younger individuals are generally more active and have been found to place greater importance on their physical well-being (Swan, Dahl, and Pel et al.r individuals have also been found to view prevention and education as equally important as medical treatments. Consequently, they are more likely to take more responsibility for their PHC based on the use of PHCI (Cangelosi et al., 2012).

H9: *Younger individuals are more likely to adopt a balanced diet.*
H10: *Younger individuals are more likely to adopt an advanced choice diet.*

Health Condition (Perceived Health): An individual's perceived level of health helps determine their overall health status. Health can best be viewed as how one feels emotionally and physically, but it can also include the absence of disease or injury (Singhal, 2018). People that perceive themselves to be healthy are more likely to adopt a PHC lifestyle and seek PHCI in order to consume a balanced diet (Petty & Cacioppo, 1986). Many studies have demonstrated that overall health is an important determinant that leads consumers to purchase organic foods as a part of their PHC lifestyle (Davies et al., 1995; Schifferstein & Oude Ophuis, 1998; Wier & Calverley, 2002; Magnusson et al., 2003; McEachern & Willock, 2004; Durham & Andrade, 2005; Gracia & de Magistris, 2008; Roitner-Schobesberger et al., 2008). Therefore, it is hypothesized that an individual's perceived health condition and dietary behaviors are related. Specifically, we formulate hypotheses H11 and H12.

H11: *Individuals with higher levels of perceived health are more likely to adopt a balanced diet.*
H12: *Individuals with higher levels of perceived health are more likely to adopt an advanced choice diet.*

Health Knowledge Level (perceived knowledge): Health knowledge level is the perceived knowledge that people have about their overall health and well-being. This knowledge level can influence PHC adoption behavior and further influence one's overall lifestyle and healthy actions (Alikari et al., 2019). If an individual believes they lead a healthy lifestyle or engage in healthy actions, they will perceive their health knowledge level to be higher. Some studies have indicated that health knowledge, environmental concerns, or a lack of trust in the food industry may affect dietary behavior (Squires et al., 2001). Other research has found that organic food consumers are more likely to seek out a more active lifestyle (Hughner et al., 2007; Bellows et al., 2010; Goetzke & Spiller, 2012). Consequently, if an individual believes they have higher levels of health knowledge, they will be more likely to engage in healthier dietary behaviors.

H13: *Individuals with higher levels of perceived health knowledge are more likely to adopt a balanced diet.*
H14: *Individuals with higher levels of perceived health knowledge are more likely to adopt an advanced choice diet.*

Social Influences

Personal Influences: Personal influences include one's spouse, parents, children, relatives, and friends (s). These influences have been found to have a significant impact on one's dietary choices (Smith et al., 2011; Barnes et al., 2020). For example, if the family member that shops for and prepares the family's food eats a certain way, then it is highly likely that the rest of the family will eat similarly (Deutsch & Gerard, 1955). This relationship is especially significant when the individual has a spouse's parents that live nearby or in the immediate household, or children that live at home. Consequently, it is more than likely that if one's relatives consume a healthy diet, they, too, are more likely to adopt the same lifestyle (Chen et al., 2019; Senteio, 2019; Bouwman et al., 2020).

H15: *Individuals that are more highly impacted by their social influences are more likely to adopt a balanced diet.*
H16: *Individuals that are more highly impacted by their social influences are more likely to adopt an advanced choice diet.*

Peer Influences

Peer Influences: In this study, peer influences include one's teachers, counselors, co-workers, clergy, employer, and neighbors. Past research in this area has found that people generally mimic those behaviors that are accepted by those whom they interact with (Hofstede, 2001; Smith et al., 2011; Zigbuo-Wenzler et al., 2020). This social acceptance coping mechanism helps people associate more closely with those around them and helps them create a better fit with their surroundings (Hofstede, 2001). Thus, if an individual believes that their peers consume a balanced or an advanced choice diet are more likely to do the same.

H17: *Individuals that are more highly impacted by their peer influences are more likely to adopt a balanced diet.*
H18: *Individuals that are more highly impacted by their peer influences are more likely to adopt an advanced choice diet.*

Professional Influences

Professional Influences: Professional influences include one's physician, nurses, pharmacists and dieticians, and lifestyle coaches, among other medical professionals (Singh et al., 2019; Wu et al., 2020). For the purpose of this manuscript, these influences are considered professionals because they have the most education and are generally accepted to be professionals in their respective fields of medicine. Consequently, the simple act of having a typical patient–the medical professional relationship is generally believed to have a positive effect on one's diet because these influencers have sufficient knowledge in the overall field of medicine to assist the individual in finding the information that they need to adopt a healthy diet that most closely meets their personal needs. Professionals also influence how people view certain foods or ingredients because they know what may or may not be suitable for their bodies. Professionals can also guide one's diet due to the patient's overall health (Alikari et al., 2019; Chen et al., 2022; Rinsum et al., 2019; Bouwman et al., 2020).

H19: *Individuals that are more highly impacted by professional influences are more likely to adopt a balanced diet.*
H20: *Individuals that are more highly impacted by professional influences are more likely to adopt an advanced choice diet.*

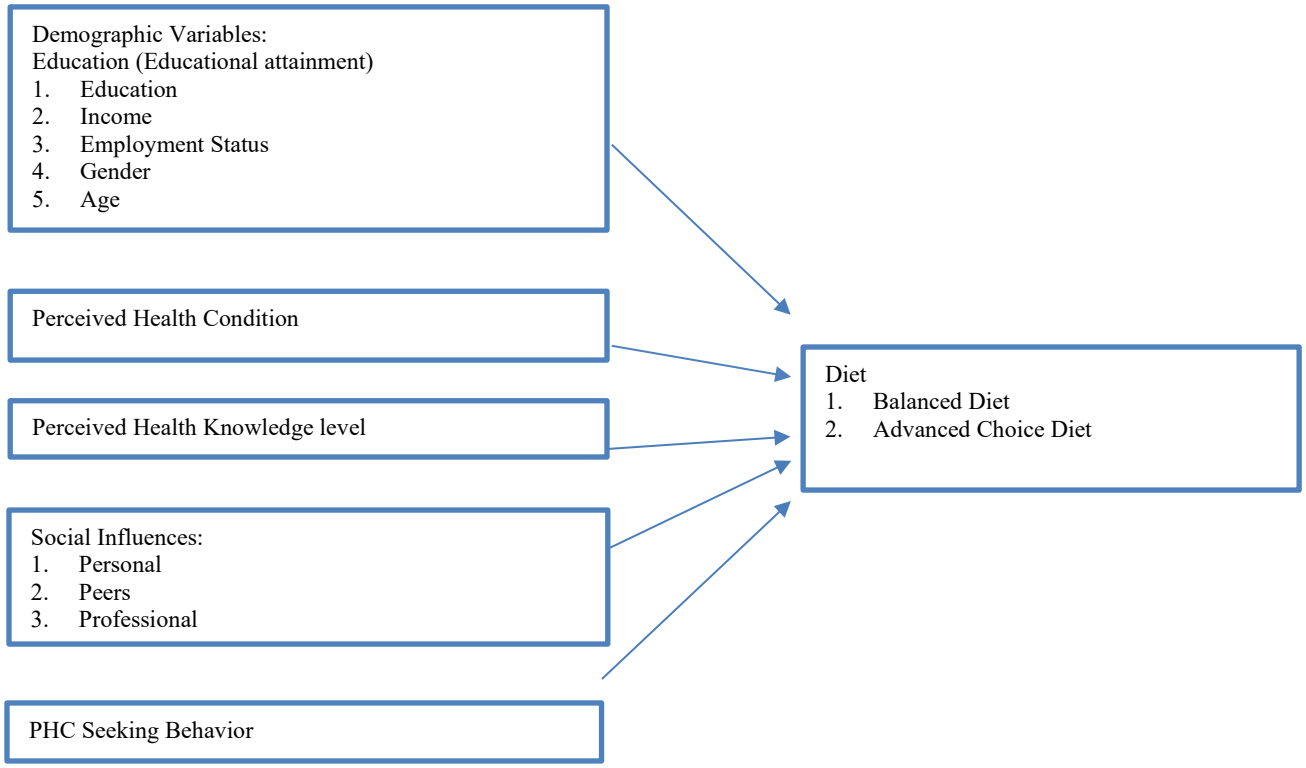
PHC Seeking Behavior

PHC, based on PHCI, enables consumers to choose better food options that best suit their immediate health and dietary concerns (Singhal, 2018). Past research in this area suggests that customers with access to PHCI through their PHC programs are more likely to seek out product information before purchasing a product. It is also generally accepted that health information, including nutritional information and health warnings, influences purchasing behaviors (Chen et al., 2020). Access to food safety information has, in turn, led to an increasing desire for food that is perceived to be healthy (Bech-Larsen & Grune, 2003; Boutin, 2008; Sahota, 2009; Rinsum et al., 2019). These advances in the field of nutritional medicine have ideally left consumers with two dietary choices after their economic concerns have been met. One is whether to adopt a balanced choice diet based on the most currently accepted food groups (e.g., vegetables, protein, etc.). The second is an advanced choice diet based on foods that include organic, non-genetical-modified-organism, and non-processed foods and supplements. Anecdotal evidence suggests that the belief that organic or local fresh food is healthier, more wholesome, and tastes better could be one of the reasons for their choices in diet behavior (Chen, 2009; 2011).

H21: *Individuals that place greater emphasis on their Preventive Health Care are more likely to adopt a balanced diet.*

H22: *Individuals that place greater emphasis on their Preventive Health Care are more likely to adopt an advanced choice diet.*

Figure 1
Theoretical Framework of This Paper



This study included demographic variables, health conditions (known as a perceived health conditions), perceived health knowledge level, and social influences (see Figure 1). The demographic variables were age, gender, education, employment status, and income. Two self-assessed variables are also included, perceived health condition and perceived level of health knowledge. Moreover, this study also examines social influences in three categories: professional, peer, and personal. The independent variables used in this study were assessed to determine their effect on two dependent dietary behaviors: a balanced diet and an advanced choice diet.

METHODOLOGY

Most questions regarding PHCI used in this study were taken from a series of studies done by Cangelosi et al. (2010b). The questions were translated from English to Chinese using the standard translation back translation process. A pilot study was conducted using a panel of 25 experts and Taiwanese Baby Boomers. Following the pilot study, minor modifications included questions on lifestyle and dietary behaviors. Most of the survey questions used were well-known and often used

in past research in the USA. The validity and reliability were tested using the pilot study data. Cronbach alphas were examined, and all measures were found to be reliable.

Data for this study was collected in Taipei City and New Taipei City in Taiwan. A convenience sample was used as graduate students targeted Baby Boomers at large retirement homes or parks they were known to frequent. About 390 usable results were generated from the initial study. Since it was conducted face-to-face, a usable rate of 95% was found.

This portion of the study began with a univariate analysis to determine and assess the normality and outliers of the data. Then a correlation analysis was conducted to assess health conditions (otherwise known as perceived health), perceived knowledge in PHCI, and major demographic and social influences variables. Hypothesis tests were performed via a correlation matrix. Stepwise regression analysis was conducted to find two simplified models.

The following tables show the demographic table and some measure-related tables. Table 1 shows the demographic profiles of the 390 survey respondents. Among the respondents, the majority were male (242 or 62.1%), and a relatively smaller proportion was female (148 or 37.9%). Most respondents were over 60 at 41%, followed by those 50-54 at 32.8%, and the smallest age group 55-60, is 26.2%. Education can be broken down into five groups, less than High School (12.3%), High School (28.5%), Associates Degree (22.6%), College Degree (33.3), and Advanced Degree (3.1%). Employed respondents, either part-time or full-time, were 60.5%, while 39.5% were unemployed or retired. The fewest respondents were in the highest income bracket of over 60,000 or more NTD (more than 2,000 USD) at 14.4%, the next highest was the 45,000-60,000 NTD (or 1,500 to 2,000 USD) at 18.7%, followed by 30,000-45,000 (or 1,000 to 1,500 USD) at 22.8%, and most of the respondents were in the less than 30,000 NTD (or 1,000 USD) income bracket at 41.8%.

Table 1
Frequency Distributions of Demographic Background

Variables	Classification of variables	Frequency	Percent
Gender	Female	148	37.9
	Male	242	62.1
	Total	390	100
Age	50-54	128	32.8
	55-60	102	26.2
	60+	160	41.0
	Total	390	100
Education	Less than High School	48	12.3
	High School	111	28.5
	Associate degree	88	22.6
	College Degree	33	33.3
	Advanced Degree	12	3.1
	Missing	1	0.3
	Total	390	100
Employment	Employed	236	60.5
	Unemployed	154	39.5
	Total	390	100
Income	Less than $30K NTD	163	41.8
	$30K – $45K NTD	89	22.8
	$45K – $60K NTD	73	18.7
	$60K and up	56	14.4
	Missing	9	2.3
	Total	390	100

*The exchange rate for NTD is 1 USD = 30 NTD

Diet was measured by nine Likert scale items and could be separated into two categories: a balanced diet and an advanced choice diet. Factor analysis with varimax rotation and Cronbach alphas were used to determine the dimension and reliability.

There are four items in the balanced diet category. The items contained in the category are eating fruits, vegetables, whole grain rhizome, and protein. The Cronbach alpha was 0.869. There are five items in the advanced choice diet. The items contained in the category are low-fat dairy, nuts, high-quality oil, supplements (vitamins), and organic food. The Cronbach alpha is 0.811.

Table 2
Alpha's, Means, and Std. Deviations between Healthy Diet and Advanced Choice Diet

Variables	# Items	Cronbach Alpha	Mean	Std.
Balanced Diet	4	0.869	3.9157	1.01498
Advanced Choice Diet	5	0.811	4.9441	.90063

Social influence variables were measured by 15 Likert scale items and were separated into three categories: Professional, Personal, and Peers. Reliability was assessed based on Cronbach alphas (see Table 3). Four items in the professional category (physicians, nurses, pharmacists, and dieticians) produced an alpha of .921. There were five items in the personal category (spouse, parents, children, relatives, and friends), which yielded an alpha of .860, and there were six items in the peer category (teachers, counselors, co-workers, clergy, employers, and neighbors) which also yielded an alpha of .860.

Table 3
Alpha's, Means, and Std. Deviations of Social Influence Variables

Variables	# Items	Cronbach Alpha	Mean	Std.
Personal	5	0.860	3.3786	.61584
Professional	4	0.921	2.5984	.61749
Peers	6	0.860	3.1266	.64498

PHCI-seeking behaviors were measured by frequencies per week. It was recorded as an ordinal scale variable (1=one time per month, 2=average two times per month, 3=average two times per week, and 4=average three times per week). The mean was 2.37, and the standard deviation was 0.97.

FINDINGS

We used Pearson correlations to examine the relationships between and among all independent and dependent variables. Table 4 shows the Pearson correlation coefficients and significance levels among demographic variables, health conditions, health knowledge, social influences, and behavior changes. It was found that income, perceived health, perceived knowledge level, personal influence, and PHCI-seeking behavior are statistically related to having an advanced choice diet. Education, income, perceived knowledge, personal influences, professional influences, peer influences, and PHC-seeking behavior are statistically related to a balanced diet.

Moreover, most demographic variables are correlated (see Table 4). For instance, income is negatively correlated with age but positively correlated with education and employment status. This finding is expected because it is logical that younger baby boomers are in the prime earning period of their lives and should have higher income levels. Unsurprisingly, it was also found that males are more likely to have higher education and income levels than their female counterparts.

Ultimately, this close relationship caused gender to be significant in the stepwise regression (see Table 6).

Perceived health condition is also associated with employment. This finding implies that baby boomers in Taiwan that are employed are more likely to perceive themselves as being healthier. Perceived knowledge is also associated with the level of education, and females were found to possess higher levels of perceived health. The positive relationship between the perceived health condition and the perceived level of PHCI confirms the importance of PHCI-seeking behavior and its contribution to a healthier self-assessed condition.

Three different social influences are closely related (see Table 4). Education was also found to be associated with professional influences and peer influences. There is a gender difference in that females are more likely to be influenced by professionals (i.e., physicians, nurses, pharmacists, or dieticians).

Study results also suggest that PHCI-seeking behavior is associated with education and gender. It was specifically found that baby boomers (specifical males) with higher levels of education are more likely to engage in PHCI-seeking behaviors. Contrary to expectations, age, employment status, and income were not found to be related to PHCH-seeking behavior in Taiwan.

It is also confirmed that those who seek PHCI are more likely to perceive themselves as being in good health or with a higher level of PHCI. PHCI-seeking behavior will enhance baby boomers' level of PHCI level and health conditions in Taiwan.

PHCI-seeking behavior was also found to affect both balanced diet choices and advanced diet behavior among baby boomers in Taiwan. This finding would then suggest that those highly engaged in PHCI-seeking are more likely to adopt a balanced and advanced diet. PHCI seeking will help Taiwanese baby boomers choose balanced food as well as organic food and supplements.

Table 4
Pearson Correlation Analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	1												
2. Education	-0.089	1											
3. Employment	-.411**	.205**	1										
4. Gender	-0.046	-.225**	-.113*	1									
5. Income (4 groups)	-.130*	.398**	.401**	-.336**	1								
6. Perceived Health	0.014	0.087	.158**	-0.046	0.078	1							
7. Perceived Knowledge	-0.022	.190**	0.022	.123*	0.043	.142**	1						
8. Personal	0.043	0.05	-0.012	-0.021	-0.045	0.067	0.065	1					
9. Professional	-0.047	.143**	-0.003	.124*	-0.009	-0.003	.147**	.335**	1				
10. Peers	-0.013	.177**	0.079	0.04	0.072	.133**	.106*	.564**	.429**	1			
11. Seeking Behavior	-0.095	.186**	0.027	-.174**	0.049	.129*	.268**	-0.007	.153**	0.086	1		
12. Advanced Diet	-0.082	0.069	-0.012	0.05	.133**	.115*	.124*	.110*	0.044	0.07	.169**	1	
13. Balanced Diet	-0.046	.124*	0.047	0.066	.216**	0.052	.144**	.178**	.130*	.188**	.174**	.506**	1

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Table 5 summarizes study results for each of the twenty-two hypotheses based on the Pearson correlation analysis found in Table 4. We first examine the relationship between demographic background and dietary behavior to better understand the study results. This portion of the analysis demonstrates that respondents' level of education is associated with the choice of a balanced diet but is not statistically significant with the choice of an advanced choice dietary behavior. It was also found that income is statistically essential to both a balanced diet and an advanced choice diet. This finding implies that baby boomers in Taiwan are more likely to be affected by income than education regarding more advanced choices, such as supplements and organic foods. Gender, age, and employment status were found to be not important in relation to diet.

In the next portion of the analysis, perceived health condition was found to have a positive relationship with an advanced choice diet but not a balanced diet. This finding would appear to imply that baby boomers are willing to spend more money for an advanced choice diet if they perceive themselves as in good health. However, the self-assessed health condition does not affect the choice of a balanced diet.

Study results also imply that one's perceived level of health knowledge affects both a balanced diet and an advanced choice diet. Thus, baby boomers in Taiwan with higher levels of PHCI were found to be more likely to adopt a balanced diet or an advanced choice diet. Consequently, this study confirms the importance and impact of PHCI among baby boomers in Taiwan.

Regarding social influences, personal influences are found to be significant for both dietary behaviors. Personal influences in this study include spouses, family, relatives, and close friends.

Study results also indicate that family, relatives, and close friends affect dietary behavior in both the adoption of a balanced diet or an advanced choice diet. Interestingly, professional influences, including physicians, nurses, pharmacists, and dieticians, only affected adopting a balanced diet but not an advanced choice diet. Similarly, peer influences, including teachers, counselors, co-workers, clergy, employers, and neighbors, were found to affect adopting a balanced diet but not an advanced choice diet. In summary, social influences were found to affect baby boomers' choice of a balanced diet, but only personal influences affected the adoption of an advanced diet. Professional and peer influences can affect a balanced diet but not a refined diet among baby boomers in Taiwan.

PHCI-seeking behavior was found to be statistically significant with both balanced and advanced diets. This finding implies that baby boomers who seek PHCI in Taiwan are more likely to adopt a balanced and advanced diet. Table 6 reviews the next portion of the analysis, which is based on regression analysis.

Table 5
Summary of Study Hypotheses

H1: Individuals that are more highly educated are more likely to adopt a balanced diet.	**Sig.**
H2: Individuals that are more highly educated are more likely to adopt an advanced choice diet.	**N.S.**
H3: People with higher incomes are more likely to adopt a balanced diet.	**Sig.**
H4: People with higher incomes are more likely to adopt an advanced choice diet.	**Sig.**
H5: People that are employed are more likely to adopt a balanced diet.	**N.S.**
H6: People that are employed are more likely to adopt an advanced choice diet.	**N.S.**
H7: Women are more likely to adopt a balanced diet.	**N.S.**
H8: Women are more likely to adopt an advanced choice diet.	**N.S.**
H9: Younger individuals are more likely to adopt a balanced diet.	**N.S.**
H10: Younger individuals are more likely to adopt an advanced choice diet.	**N.S.**
H11: Higher perceived health is more likely to affect the choice of a balanced diet.	**N.S.**
H12: Higher perceived health is more likely to affect the choice of an advanced choice diet.	**Sig.**
H13: Higher perceived knowledge is more likely to affect the choice of a balanced diet.	**Sig.**
H14: Higher perceived knowledge is more likely to affect the choice of an advanced choice diet.	**Sig.**
H15: Personal influences are more likely to affect the choice of a balanced diet.	**Sig.**
H16: Personal influences are more likely to affect the choice of an advanced choice diet.	**Sig.**
H17: Peer influences are more likely to affect the choice of a balanced diet.	**Sig.**
H18: Peer influences are more likely to affect the choice of an advanced choice diet.	**N.S.**
H19: Professional influences are more likely to affect the choice of a balanced diet.	**Sig.**
H20: Professional influences are more likely to affect the choice of an advanced choice diet.	**N.S.**
H21: PHCI Seeking behavior is more likely to affect the choice of a balanced diet.	**Sig.**
H22: PHCI Seeking behavior is more likely to affect the choice of an advanced choice diet.	**Sig.**

Because independent variables were found to be correlated with each other, a regression analysis was used to determine which variables to include in the final model. To aid clarity, a stepwise regression analysis was conducted in order to predict the simplified outcome based on the major constructs, which are highly correlated. This study analyzed two different models: a balanced diet and an advanced choice diet (see Table 6).

The analysis of the balanced diet model shows that PHCI-seeking behavior, income, personal influences, and gender best predict the respondents' adoption of a balanced diet. Interestingly, gender was not significant in the correlation matrix but was strongly associated with the adoption of a balanced diet in the stepwise regression model. For baby boomers in Taiwan, the most important predictors for their balanced dietary behavior are income, gender, personal influences (family, relatives, and close friends), and PHCI-seeking behavior. This model yielded an R-square of 14.0%.

Table 6
Stepwise Regression Analysis Comparison

	Balanced Diet		Advanced Choice	
Parameters	Unstandardized B	t	Unstandardized B	t
(constant)	2.607	7.513	4.494	15.423
Seeking Behavior	.165	3.096	.142	2.948
Income	.260	5.284	.116	2.718
Personal Influences	.338	4.013	.198	2.553
Gender	.263	2.319		
R squared	.140		.060	

* Level of significance at 0.05 ($t \geq 1.96$).

In the advanced diet model, income, personal influences, and PHCI-seeking behavior were found to predict an advanced choice diet best. This model produced an R-square of 6%. Gender was found to be significant in the balanced diet model but not in the advanced diet model. A relatively low explanation power, i.e., R-square, suggests that adopting an advanced choice diet is a highly complex construct requiring additional research. For instance, different ways of food preparation, beliefs, and attitudes to the meaning of food, environment protection, and local economy are all possible reasons that consumers purchase organic food, GM-free food, etc. (Hughner et al., 2007; Bellows et al., 2010; Pelletier et al., 2013).

CONCLUSION

In conclusion, income, personal influences, and PHCI-seeking behavior were identified as the best predicting indicators for adopting a balanced and advanced diet for baby boomers in Taiwan. Study findings also suggest that gender was statistically significant in the stepwise regression for predicting a balanced diet.

PHCI information was generally found to impact one's dietary behavior and overall health. Similarly, it was also found that respondents that possess more PHCI knowledge may care more

about their diet in addition to their exercise and daily lifestyle habits. PHCI is confirmed to be very important in the dietary behavior of Taiwanese baby boomers.

Income was found to be important in stepwise regression models as well as in Pearson correlation analysis. Income was found to be one of the critical factors that affect the adoption of organic food since income is a financial resource and represents purchasing power. The more income that one has, the more likely they are to consume balanced items and an advanced diet such as organic fruits and supplements. Education was found to be statistically significant in correlation analysis, but since it is associated with income and PHCI-seeking behavior, it was found not significant in the regression models.

Gender is not statistically crucial in bivariate analysis. Females are more likely to have a healthy diet behavior, for a balanced diet and advanced diet. However, it is highly correlated with income, PHCI knowledge, Professional Influence, and PHCI-seeking behavior; it was only found to be a good predictor for a balanced diet regression model. Females are more like to choose a balanced choice model but not necessarily the advanced diet model if we control for income, PHCI knowledge, Professional Influence, and PHCI seeking behavior. Income, PHCI seeking behavior, and Personal Influences can predict the advanced diet without the factor of gender.

Social influences are other important facets that this study focuses on. Professional influences (Physicians, nurses, pharmacists, and dieticians) and peer influences (co-workers, employers, neighbors, and clergy) were found to be significant with an advanced diet but not a balanced diet from the bivariate analysis. Only personal influences (spouse, parents, children, relatives, and friends) are important in the selection of one's diet and the adoption of a balanced or advanced choice diet. It is also identified as significant in stepwise regression models. In Taiwan, most families cook, and if one family member has dietary restrictions due to their health, the other immediate family members are likely to adopt similar dietary habits. Relatively, personal influences (family, relatives, and friends) are more influential than professionals or peers.

PHCI, or perceived level of PHCI, was found to be statistically significant to both dietary behaviors based on the Pearson correlation. When we conducted a stepwise regression analysis, the PHCI seeking behavior was statistically significant in the models. The perceived level of PHCH was no longer significant because of the correlation between PHCI and its seeking behavior. Study results confirm that Baby Boomers in Taiwan with proactive PHCI-seeking behavior are more likely to adopt a balanced or an advanced choice diet.

In sum, from a demographic perspective, income and gender are two important factors that affect Taiwanese baby boomers' dietary behavior. For social influences, personal influences are relatively more important. Professional influences were found to affect advanced choice diet in the bivariate model but not in the final models. Perceived level of PHCI and perceived health condition are important to both dietary behaviors from the bivariate analysis. But in the final models, only PHCI seeking behavior turns out to be significant. PHCI and its seeking behavior are still one of the most important factors that affect dietary choices among Taiwanese baby boomers.

This study confirms the relationship of two dietary behaviors with demographic variables, income, social influence variable, personal influence, and the importance of PHCI. However, this study,

like most suffer from its snapshot of a single moment in time in Taipei and New Taipei Cities and its use of a convenient sample; consequently, study findings may not be generalizable in other areas. These limitations notwithstanding, this study does provide an important step in aiding researchers in better understanding the adoption and use of PHC and PHCI in Taiwan.

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ASSESSING MOBILE PAYMENT SECURITY THROUGH SSL PROXYING: AN ANALYSIS OF POPULAR PAYMENT METHODS

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ABSTRACT

Mobile payments have become increasingly popular due to their convenience, speed, and ease of use. There are various mobile payment options available, including Apple Pay, Google Pay, Venmo, PayPal, and Cash App. However, with mobile payments being relatively new, it's essential to understand the potential security risks associated with these options, such as the potential for mobile payment companies to gather a customer's personal information for fraudulent activities. This project aimed to explore these risks and compare the features and functionalities of five popular mobile payment options: Apple Pay, Google Pay, Venmo, PayPal, and Cash App. The project also focused on determining whether SSL Proxying, a technique used by hackers to intercept and read encrypted data sent over SSL connections, was detected by the mobile payment options studied. Overall, while mobile payments offer a quick and easy way to conduct transactions, users should take appropriate measures to protect their personal information and remain vigilant against potential security threats, should take appropriate measures to protect their personal information, and remain vigilant against potential security threats.

Keywords: Mobile Transactions, SSL Proxying, Security, Mobile Payment Apps

INTRODUCTION

Currency has been a focal point of nearly all civilizations to date. The way we purchase and acquire items has shifted throughout history and will continue to change with time; one current method that is dominating the modern market is mobile payments. In the past, the predominant method of payment was credit cards. However, credit cards have been surpassed by mobile payments as mobile payments allow users to have all their information in one place. The convenience factor in mobile payments is higher as opposed to credit card payments. For instance, Xue and Lin, 2019 found a significant increase in consumers' willingness to use mobile payments over credit cards. Additionally, large financial institutions have witnessed an increase in mobile payment technology over cash purchases (Agarwal, Qian, Ren, Tsai, & Yeung, 2020). Mobile payments can be defined as "a transfer of funds in return for goods and services in which a mobile device is functionally involved in executing and confirming payment" (Taylor, 2016). Mobile payments have begun to revolutionize how people conduct their transactions globally. In 2017, mobile payments made up 3% of the market share of point-of-sale payment methods in the United States, and this percentage increased to 11% by 2021 (*US: Payment methods in retail,* 2021). During the COVID-19

pandemic, many utilized mobile payments for the first time to conduct safe contactless transactions. After the start of the pandemic, over 80 million adults in India and over 100 million adults in China made their first digital merchant payment (*COVID-19 Drives Global Surge in use of Digital Payments,* 2022).

The first mobile payment system was created in 1997 in Helsinki, Finland, where consumers could purchase a Coca Cola beverage from a vending machine simply through an SMS message (Mansuri, 2022). After the creation of SMS-based payments, mobile payments evolved and expanded their capabilities and functions. In 1998, one of the largest and most used mobile payment systems to date was founded: PayPal. The early 2000s brought new ways of utilizing mobile payments, such as purchasing movie tickets on a mobile phone and ordering pizza, and the advancements of cell phones during the early 2000s was a major contributing factor to the continuing growth of mobile payment systems. The high usage of mobile phones has caused many industries such as banking and entertainment to focus their efforts on mobile phone adaptability (Ahmed et al. 2021). In 2011, Google created a digital mobile wallet, and this was the beginning of major corporations adventuring into the world of mobile payments and eventually creating their own systems (Mansuri, 2022). An example of a corporation that has capitalized on the mobile payment market is Apple; this company has branched into mobile payments through the creation of Apple Wallet, Apple Cash, and Apple Pay. The adoption of mobile payments in recent years has begun to increase exponentially. According to Merchant Savvy, "China is the leader when it comes to mobile payments, with 87.3% of the population reported to use contactless payment methods" (*50+ Global Mobile Payment Stats, Data & Trends,* 2022).

There are concerns about the security and vulnerability of all payment systems. According to Bankrate, in 2021, there were nearly 390,000 reports of credit card fraud to the Federal Trade Commission (FTC) with losses amounting to over $6 billion (Bankrate.com, 2023). In recent news, PayPal identified 4.5 million accounts that are believed to have been created illicitly (Kauflin, 2022). Many would raise the question as to how these accounts were created and for what purpose. In 2021, PayPal attempted to bring in new customers by offering five or ten dollars to be deposited into a new user's account if the said person signed up for PayPal or Venmo. This caused problems when bots and/or software were utilized to automatically sign up for PayPal or Venmo, essentially stealing an approximated 22.5 million to upwards of 45 million dollars. One of the main purposes of this project is to compare five of the major mobile payment systems available: Apple Pay, Google Pay, Venmo, Cash App, and PayPal. In other words, this project will outline these five major mobile payments, what their functions include, the security systems in place, how their transactions take place, recent breaches, etc. Two example scenarios of how mobile payments can be abused with little effort will also be highlighted.

COMPARISON OF MOBILE PAYMENT METHODS

Apple Pay

Apple Pay was created in 2014 and is compatible with iPhone 6 and newer models. Since 2014, Apple Pay has slowly migrated its way into 74 countries globally, the newest country being Malaysia as of August 9, 2022. Apple Pay is already preinstalled onto every iPhone and is accepted at more than 85 percent of U.S. retailers (*Apple Pay*, 2022). When conducting a transaction on

Apple Pay, the user must submit a two-factor authentication test such as Touch ID, PIN, or Face ID to complete the transaction. Apple Pay also includes a feature called Apple Cash. This feature allows the user to request and/or send money to a recipient through text messaging. Apple Pay can also be used to ride public transportation in countries such as China, the United Kingdom, and the United States (*Where you can ride transit using Apple Pay*, 2022*).* Apple Pay has approximately 507 million users worldwide (*Apple Pay – statistics and facts*, 2022), and it is statistically the most popular mobile payment method in the United States with an estimated 31.2 million more users than Google Pay (Curry, 2022).

On the security side of Apple Pay, it utilizes a few hardware and software to prevent the user's information from being compromised. One component of Apple Pay's security is the Secure Element chip. This chip complies with financial industry requirements for mobile payments because it runs the Java Card Platform (*Apple Pay component security,* 2022). Another component of Apple Pay's security is the NFC Controller. The NFC Controller "handles Near Field Communication protocols and routes communication between the Application Processor and the Secure Element, and between the Secure Element and the point-of-sale terminal" (*Apple Pay component security,* 2022). Essentially, NFC is responsible for keeping the transaction secure. NFC utilizes a maximum range of only a few centimeters to ensure the transaction is not intercepted by possible observers. The third component of Apple Pay's security is Apple Wallet. Apple Wallet is a preinstalled application on iPhones that allows the user to make payments as well as manage credit, debit, and store cards (*Apple Pay component security,* 2022). The fourth component in Apple Pay's security is Secure Enclave. The Secure Enclave is a system on Apple devices that oversees the authentication process and allows a payment to proceed (*Apple Pay component security,* 2022). The last component of Apple Pay's security is the Apple Pay Servers. These servers "manage the setup and provisioning of credit, debit, transit, student ID, and access cards in Apple Wallet" (*Apple Pay component security,* 2022). These servers also manage the Device Account Number that is stored in the Secure Element component. The servers additionally communicate with the payment network or the card issuer servers and the device itself. The last responsibility of Apple Pay's servers is to "re-encrypt payment credentials for payments within apps or on the web" (*Apple Pay component security,* 2022).

Google Pay

Google Pay was created in 2011 and can be utilized on iPhones, Android devices, as well as Chrome Operating System Computers. Google Pay is currently available to conduct mobile payments in 54 countries globally (*Find supported payment methods—Google Wallet Help*, 2022). Google Pay does not come preinstalled on Android or iPhone devices and must be installed through their respective application stores. As of March 2022, Google Pay is accepted in an estimated 41% of restaurants, stores, and other point-of-sales in the United States (*Google Pay use per country,* 2022). One of Google Pay's functions is the ability to pay or request money from a group of people through a group chat on the application. Google Pay also keeps track of who has paid their portion and who has not paid. Another function of Google Pay is the ability to track and categorize the user's purchases based on where the purchase was made, even if the purchase was not made with Google Pay. The way Google Pay does this is through the optional functionality of adding your credit card, debit card, transit passes, and business loyalty cards to your Google Pay application. When these extra cards are added to the user's Google Pay app, Google Pay will be able to find

past transactions of all the cards added to the application and where they took place. Google Pay can also show how much the user has spent in the last day, week, or month between the cards that are added to the application. This can be seen as a security risk to some due to potentially all a user's purchases being found in one application but can also be seen as convenient to others. Google Pay also offers Cashback rewards at certain times. According to the Google Play Store, Google Pay has accumulated roughly 500 million Android users since its release (*Google Pay: Save and Pay - Apps on Google Play,* 2022). When a transaction takes place in the Google Pay application, there is a two-factor authentication test before the transaction can be completed. This two-factor authentication test can be completed with a fingerprint scan, lock pattern check, PIN, face ID, or password.

On the security side of Google Pay, one of the security systems in place is a fraud detection system that alerts the user to any fraudulent purchases or risks associated with their account. Google Pay will also tell the user when they are sending or receiving currency from an unknown user or someone who is not on the user's contact list. Google Pay also makes the promise that "Google Pay will never sell your personal information to third parties or share your transaction history with any other Google service for targeting ads" (*Google Pay—Learn What the Google Pay App Is & How To Use It,* 2022). However, Google Pay has the option to "personalize" your experience on the application by utilizing your past and current transactional history. In this sense, "personalize" would be defined as allowing Google Pay to share your transactional history with companies that are relevant to your transactional history. The option to "personalize" the experience of the application is turned off by default. Google Pay also creates a VAN (Virtual Account Number) for the user so no seller has access to the user's real card number (*Google Pay Safety & Security Features—Google Safety Center*, 2022). If the user's mobile device is lost or stolen, the user can remotely lock their Google Account from the Google Find My Device application. Google Pay also utilizes the same technology as Apple Pay to conduct in-person mobile payments, NFC. One of Google Pay's more controversial decisions is the option to not offer buyer protection. In other words, if there are any problems with a purchase through Google Pay, they will not investigate or refund the user's money (*Google Pay—Learn What the Google Pay App Is & How To Use It,* 2022). In recent times, there have been no data breaches or intrusions for Google Pay, but it is only a matter of time before a security breach happens.

Cash App

Cash App was created in 2013 and is the number one app under the Finance section of the Apple App Store (*Cash App,* 2022). Cash App is only available in the United States and the United Kingdom. Cash App allows users to send and receive money with an email, phone number, or Cash App's "$Cashtag". Cash App's $Cashtag is essentially a user's profile name on the application. Cash App also offers to send and receive money through QR codes specifically tailored to each user account. Cash App allows the user to purchase, receive and send stocks and Bitcoin to other users; it also gives the option to round up purchases to the nearest dollar and invest the change into stocks of Bitcoin. Like Google Pay, Cash App offers users rewards and discounts on stores and restaurants, such as Bed Bath and Beyond (*Cash App—Save on everyday spending,* 2022). Cash App also has its own card, the Cash Card, which serves the same purpose as Cash App but in a physical card form. The Cash Card also offers even more exclusive discounts to the user. Cash App is available for ages thirteen plus and can file your taxes for no extra charge (*Cash*

App—Save on everyday spending, 2022). Cash App has the optional method of paying directly to a mobile payment point-of-sale through the user's mobile device, called Cash App Pay. In quarter four of 2021, it was reported that Cash App had 44 million monthly active users and 13 million users signed up for Cash App Card (Curry, 2022). In 2018, Cash App's annual revenue was 400 million dollars. In 2021, the annual revenue was 12.3 billion dollars (Curry, 2022).

On the security side of Cash App, Cash App offers two-factor authentication, like Apple Pay and Google Pay. When logging into a Cash App account, the user must first enter the phone number registered to the account. Once the phone number is entered, the user's phone will receive a code that has to be entered into the Cash App application. Once the phone number is verified, Cash App will ask for the email address associated with your profile. An email will be sent to the user's email address and will contain another code to enter into the application. Once this code is entered into the application, the user will be logged in. After the user is logged in, they will receive a text message specifying the user's account was logged into. The information in the user's text is the date, time, and location of where the account was logged in from. When a user is attempting to conduct a transaction on Cash App, the user must submit another authorization test in the form of a PIN, Touch ID, or Face ID. The Cash App Card utilizes nearly identical NFC technology as Google and Apple Pay.

Cash App also utilizes the fraud detection system that monitors square point-of-sale terminals, such as a SquareUp Reader. On April 4, 2022, Cash App detected a data breach that affected an estimated 8.2 million users. The actual breach took place in December 2021. This breach stole users' names, bank account numbers, and more (Drapkin, 2022). When considering mobile payments, security is of utmost importance, and therefore security standards have been developed to keep organizations accountable; one such security standard is the Payment Card Industry Data Security Standards (PCI DSS) (Ahmed et al. 2021). Cash App is PCI DSS Level 1 complaint. Level 1 PCI DSS is defined as "a set of security requirements established by the PCI SSC to ensure that all companies that process, store, or transmit credit card or cardholder data maintain a secure environment" (Baykara, 2022). To obtain Level 1 PCI DSS compliance, internal and external security screenings are conducted by authorized independent audit institutions. Cash App manages its internal systems and operations according to a relatively comprehensive list of criteria and rules. In addition, all processes and procedures are subject to detailed on-site audits every year (Baykara, 2022). Cash App also comes with a feature to disable the user's card and account whenever needed. In the case that a Cash App user has a Cash App Card, the user will have their money insured up to 250,000 dollars if the user's bank goes out of business by the FDIC (Federal Deposit Insurance Corporation). The FDIC, however, does not cover the user's money that is lost to fraud on the Cash App application. Like PayPal, Cash App often offers five or ten dollars to people who create a Cash App account and invite their friends. This could prove to backfire for Cash App like it has for PayPal, but it has yet to be documented.

PayPal

PayPal was created in 1998 and conducted over 19 billion transactions in 2021 (Curry, 2022). PayPal, like Google Pay, Apple Pay, and Cash App, supplies users offers and cashback on certain companies. PayPal's central focus is the ability to send and receive currency in almost every region on Earth. The application can be accessed on IOS devices, Android devices, and computers.

PayPal, like the other mobile payments, has a rewards program that rewards the user points whenever the user conducts a transaction. These points can be redeemed for direct transactions through PayPal or can be redeemed for charitable donations (*PayPal Rewards Program,* 2022). One function of PayPal that the other mobile payments discussed do not have is the ability to pay for purchases over time and customize when and how much is paid overtime. PayPal also offers a physical card known as the PayPal Cashback Mastercard. This card offers the users unlimited 3% cashback on PayPal purchases and unlimited 2% cashback on other eligible purchases (*PayPal Rewards Program,* 2022). PayPal users, like Cash App, can purchase and sell Bitcoin. PayPal expands on Cash App's cryptocurrency stocks by adding Bitcoin Cash, Ethereum, and Litecoin to be purchased and sold by their users. The application can also deposit checks and scan QR codes as a form of payment. Another function of PayPal is to manage the user's bills from the application itself. In 2021, PayPal made an estimated 25.3 billion in revenue, and has reported an increase in annual revenue each year since 2010 (Curry, 2022).

Recently, PayPal acknowledged that 4.5 million accounts were created fraudulently to take advantage of the new user sign-up promotion. In 2020, a hacker named Alex Birsan discovered a security vulnerability in PayPal and reported it to PayPal's Bug Bounty Program. While exploring PayPal's authentication flow, he discovered a JavaScript file with a session ID that could potentially allow attackers to exploit the data. Birsan then tested an XSSI vulnerability on the JavaScript file and found that the session ID was still visible in plain text, but this alone was not enough to impersonate a user's account.

After examining PayPal's main login form, Birsan discovered that after a few failed login attempts, users would be required to solve a reCAPTCHA challenge before trying again. A reCAPTCHA challenge involves choosing which photos are appropriate for a given question. If the challenge is solved, an HTTP POST request is initiated, which allows data to be sent to the server. Birsan found that he could obtain a victim's PayPal email address and password if he performed an HTTP POST request test with the right timing and user-interaction, while knowing all the tokens used in the request. Birsan reported his findings to PayPal's Bug Bounty Program, and he was awarded $15,300 for his discovery on December 10, 2019. PayPal fixed the vulnerability within five days after the award was granted. (Birsan, 2020).

One of PayPal's security systems in place is the PayPal Security Key. This Security Key is a free layer of security at login, like two-factor authentication previously mentioned. The user upon login will be prompted to enter their password as well as an OTP (One-Time PIN) that is unique per login attempt. PayPal also has in place a fraud detection system, like the other mobile payment options mentioned, where the user can be texted, called, or emailed alerts when any attempt at a fraudulent login or charge has taken place. PayPal's security also utilizes Key Pinning to establish TLS (Transport Layer Security) connections from the user's mobile device into a verified PayPal server, preventing fraudulent interceptions from occurring. Key Pinning can be defined as "an Internet security mechanism which allows HTTPS websites to resist impersonation by attackers using mis-issued or otherwise fraudulent digital certificates" (*Public Key Pinning/Certificate pinning,* 2022). PayPal, like Cash App, is PCI DSS Level 1 complaint. PayPal has partnered with the company HackerOne to encourage the findings of vulnerabilities in PayPal's systems by ethical hackers and to report these findings through PayPal's Bug Bounty Program.

Venmo

Venmo was created in 2009 and is only available in the United States. In 2014, PayPal purchased the parent company to Venmo, Braintree, for 800 million dollars (Krosofsky, 2020). In 2021, Venmo made an estimated 850 million dollars, a 44% increase from 2020 (Curry, 2022). Like Cash App and PayPal, Venmo offers their users a physical card to be able to earn up to 3% cashback when the user sends or spends on the Venmo account (*Venmo—Share Payments,* 2022). The Venmo Credit Card also displays a personal QR code on its front to make transactions faster. The Venmo Credit Card displays all card activity for the user to manage in one spot, like Google Pay. The Venmo Credit Card also allows users to share and split purchases with other users (*Venmo—Share Payments,* 2022). Venmo offers users another optional physical card, the Venmo Debit Card. This debit card also allows the user to track, split and share purchases through the application. The debit card also can be withdrawn from an ATM if needed. Venmo cards provide contactless shopping for Venmo's users. Venmo, like Cash App and PayPal, allows users to invest in cryptocurrencies including Bitcoin, Ethereum, Bitcoin Cash, and Litecoin (*Crypto on Venmo*, 2022). The users can also toggle price change alerts on cryptocurrencies and decide how much the user wants to invest daily. The application's users must be age 18 plus to utilize Venmo. Venmo can be accessed by Apple devices, Android devices, and computers. In 2021, Venmo reported 70 million users (Curry, 2022). Another function of Venmo is the ability to use the user's funds to purchase items at their featured partners, such as Door Dash and Foot Locker. When a user is attempting to login into Venmo, like the other mobile payments, the user will have to complete a two-factor authentication test. This test will send the user a text message with a code, and then the user will place this code into the text box provided on the application to log in.

On the security side of Venmo, Venmo offers security researchers the chance to report vulnerability findings to the same program PayPal utilizes, the PayPal Bug Bounty Program. Venmo also offers the user an additional means of security in the form of Face ID and/or a PIN. One interesting possible security issue with Venmo is the Venmo Credit and Debit Cards. These cards present possible issues due to the company's data collection. The data collected from these cards are utilized to offer recommendations in the form of Venmo's reward system. However, although this may seem convenient for the user, it also proves that Venmo is reviewing the transactional history from the user's card to "personalize" their experience, like Google Pay. One difference between Venmo and Google Pay in this instance is that Google Pay offers the users the ability to turn off the "personalize" option, while Venmo does not. Venmo is PCI DSS complaint.

Dan Salmon, an Information Security graduate, discovered a security vulnerability in the mobile payment app Venmo in 2019. By analyzing his phone's network traffic, he found that a public API endpoint was returning data to the feed, allowing anyone to request the latest twenty transactions from around the world without authorization (Salmon, 2019). Salmon wrote a 20-line Python script to scrape the API endpoint and found that he could download an estimated 115,000 transactions a day, potentially exposing sensitive information about Venmo users, including which other applications they were using, and transactions made for illegal goods. Salmon concluded that unethical hackers could use this vulnerability to launch spear phishing attacks on Venmo users and recommended that users change their privacy settings to prevent this vulnerability from being exploited (What is Spear Phishing? Definition, Risks and More, 2022).

An API is an interface that allows companies to open their applications' data and functionality to external third-party developers and business partners, and Salmon found that Venmo's API endpoint could be accessed outside of the application without authorization (IBM, 2020). This vulnerability highlights the importance of implementing proper security measures to protect user data in mobile payment applications. Salmon's findings demonstrate that even with a limit of two transactions per minute per IP address, unethical hackers could potentially access large amounts of sensitive information and use it for malicious purposes. Venmo users should be aware of the risks associated with using the application and take necessary steps to protect their privacy and security (HTTP Methods GET vs POST, 2022).

	Apple Pay	**Google Pay**	**Cash App**	**PayPal**	**Venmo**
Year Created	2014	2011	2013	1998	2009
Users (2021)	507 million	500 million	44 million	426 million	70 million
Availability	74 countries	54 countries	UK & US	Most regions	US only

Table 1: Summary of comparison of five mobile payment option

METHODOLOGY

In this section we discuss the methodology used to analyze the security of five major mobile payment applications.

Data Collection

Square is a company that provides mobile payment solutions, and it has grown in popularity due to offering relatively cheap options for small/local business to receive mobile payments. A SquareUp Reader for Chip and Card has the capacity to take mobile payments through Apple Pay, Google Pay, and Cash App. A SquareUp Reader was purchased to analyze these three methods of mobile payments, and it was used in connection to an iPhone 7. A Square account was created, and the associated "business" attached to it was named "Collectibles." This fake business account was used to collect data for this project. Two accounts from each mobile payment service (Apple Pay, Google Pay, and Cash App) were collected, creating a sample size of six. The mobile finical transaction was performed by a member of the researchers. Two of the target mobile payments, Venmo and PayPal, are not accepted by the SquareUp Reader. Therefore, these applications were downloaded to an iPhone 7 and transactions were made directly through the app. Two accounts for PayPal and two accounts for Venmo were collected and analyzed.

Mobile Payment Experimental Scenarios

The first experimental scenario that was explored with mobile payments used the Square fake business "Collectibles." With Collectibles, the owner of the Square Account can add customers to a database when conducting a transaction. Many companies have similar systems in place that ask customers for their phone number, name, address, or email in exchange to sign up for coupons or a rewards program. This first experimental scenario aims to answer the question, could the hypothetical owner of Collectibles utilize this system for personal gain? The first scenario is quite a real possibility in today's world. To begin this scenario, the owner of Collectibles could ask a

customer if they would like to sign up for the "Rewards Program." If the customer says no, the scenario is halted. However, with enough volume of customers, the owner is bound to get at least one customer to sign up. If a customer agrees to join the rewards program, the owner could potentially ask for their name, address, email, and phone number, but it is not likely that a customer would give all this information away. For this scenario, the owner will only ask for their name and phone number. Once this information is recorded and stored into the customer database, the owner could now potentially utilize this information to figure out more details about their customers.

The second experimental scenario that was explored with mobile payments was also observed through the perspective of the owner of Collectibles. When a transaction is conducted on the SquareUp Reader, the owner has the option to email or text the customer their receipt. When the transaction is complete, the owner can review the receipt in the Square Application. This receipt includes the last four digits of the customer's card. This experimental scenario raises the question, could the hypothetical owner of Collectibles attempt to figure out the rest of the customer's card number? The second scenario is more hypothetical than the first scenario. In this second scenario, the owner would observe the receipts from previous customer transactions. These receipts would show the owner the last four digits of the customer's card and what card type the customer paid with. To simulate how the owner could predict if a card number is valid from only having the last four digits and guessing the rest, the Luhn's Algorithm was used. This algorithm is defined as "a formula used to validate a variety of identification numbers, such as credit card numbers" (*Luhn algorithm,* 2022).

Data Analysis Tool

The forensic tool utilized for this project was Charles Web Debugging Proxy. This program can directly observe network traffic and determine what programs or software were utilized on a mobile device or computer in each time slot. Charles can also act as a "man in the middle" for SSL Proxying attacks. For the utilization of this project, the SSL Proxying feature of Charles was the only feature that was tested. SSL Proxying is defined as a "transparent proxy that performs Secure Sockets Layer encryption (SSL) and decryption between the client and the server. Neither the server nor the client can detect its presence" (*What is a SSL Proxy? Definition & Related FAQs,* 2022). Essentially this means that Charles can observe oncoming network traffic packets and decrypt what is located inside these packets if SSL Proxying is enabled. In theory, neither the server of the application nor the client of the application should be able to detect the SSL Proxying. This project tested if the five mobile payment options would detect the presence of the SSL Proxying attack and what reaction the applications would have if the SSL Proxying is detected.

To enable SSL Proxying on Charles and the iPhone 7, there were a few steps to complete before this could happen. The first step was to install Charles Web Debugging Proxy onto a computer. The second step was to set up Charles to observe the iPhone 7's network traffic. To accomplish this step, the research group had to go to iPhone 7's settings and from there Wi-Fi settings were selected. From Wi-Fi settings the Configure Proxy was selected. On Configure Proxy, since Charles stated that 8888 was the port number for connecting mobile devices to Charles, 8888 was used as the port number and the default IP was selected. Once the Proxy was configured on the iPhone 7, Charles automatically detected the iPhone 7 and allowed the researchers to record the network traffic coming from the iPhone. At this point, Charles could record network traffic, but it

could not decrypt what was sent in the requests from the applications. This is not a function utilized for this experiment, however, to enable SSL Proxying the researchers had to solve this problem. To solve this, the Safari Application on the iPhone 7 was accessed to download the certificate of SSL Proxying by Charles onto the iPhone 7. A certificate in this sense is "a unique, digitally signed document which authoritatively identifies the identity of an individual or organization" (*What is a Certificate?* 2021). This specific generated certificate can be utilized on websites and/or applications in place of the authentic certificate a website and/or application is supposed to have. Once this certificate was downloaded, it was able to determine which mobile payments were detecting the SSL Proxying and which ones showed no signs of detection through Charles.

RESULTS

Mobile Payment Experimental Scenarios

The first experimental scenario's goals were to find as much information as possible from only the name and phone number of the hypothetical customers: Dante and Sadie. With just the phone number of Dante, member of the research group was able to discover a few pieces of personal information from "usphonebook.com." The first thing member of the research group found was Dante's real name. From there, within seconds a member of the research group was able to locate Dante's address, phone type, the carrier of the phone, and relatives. member of the research group was also able to find Dante's former address, former phone number, and age very easily as shown in Figures 1 and 2 below.

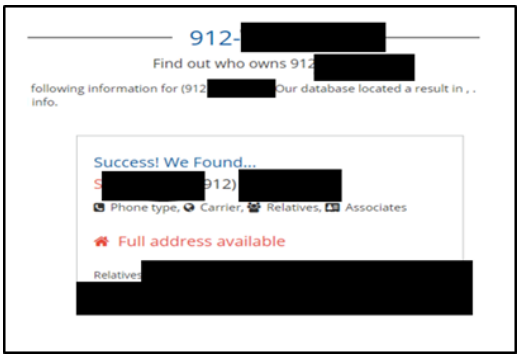

Figure 1: Information gathered on "usphonebook.com" from Dante's phone number and name.

From this discovered information, all of Dante's relatives' numbers, addresses, ages, and prior addresses and phone numbers could be found with further searching. In many cases most database websites, like White Pages, will make the user pay for this personal information. However, we utilized usphonebook.com so the information was free and relatively easy to find, which can be frightening when considering the security concerns.

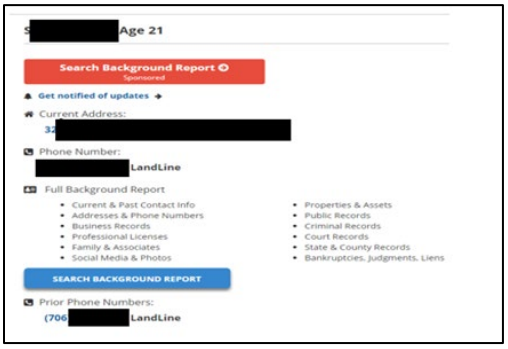

Figure 2: Additional information gathered on "usphonebook.com" knowing Dante's phone number and name

Using Sadie's phone number, member of the research group was able to find their name, age, address, relatives, former addresses, and phone numbers from "usphonebook.com." To gather more information, member of the research group utilized another website called "Spokeo.com." On Spokeo, member of the research group was able to search Sadie's actual name and gather additional information including a Google Maps representation of Sadie's former addresses, the number of bathrooms and beds in their present address, how long Sadie has lived there, and three former phone numbers with the activation location and service provider attached to the phone numbers as shown in Figure 3. If someone had wanted to dive further into Sadie's relatives and figure out their personal information, this could have been done with relative ease. With Spokeo, a member of the research group did not have to purchase any of the information, and it was found within seconds of searching Sadie's actual name.

Figure 3: Information gathered on "Spokeo.com" knowing phone number and name.

In the second experimental scenario, member of the research group mentioned the fake example card numbers of "4556 7375 8689 9855" and "4024 0071 0902 2143." These card numbers were tested to see if they were valid or not through the Luhn's Algorithm. The member of the research group utilized the first card number, "4556 7375 8689 9855" for the first part of this scenario. The first step of Luhn's Algorithm was to start at the second to last number on the right, in this case 5, and from this point skip every other number moving from right to left. The numbers not skipped, 5,9,8,8,7,7,5, 4, were doubled. When these numbers were doubled, however, numbers that were more than one digit were added up after being doubled. In this example, the 5 was doubled to 10

but to comply with Luhn's Algorithm, the 10 turned into 1+0 which added to 1. The resulting numbers left to right were 8,1,5,5,7,7,9,1. The next step was to add these numbers up to get 43. The numbers that were skipped, 5,8,9,6,5,3,6,5, were added to the previously established 43. These numbers added to the 43 was a total of 90. If the last digit ends in a 0, the card number is valid. In this case the card number could be validated through the Luhn's Algorithm. The second card number, "4024 0071 0902 2143", was utilized next. member of the research group followed the same steps as before. member of the research group started at the 4 in "2143" and skipped every other number, and following the same process as mentioned above this resulted in the final set of 8,4,0,0,5,0,0,4,8. These numbers were then added up to equal 29. The numbers skipped, 0,4,0,1,9,2,1,3, were then added up to equal 20. When adding 20 and 29, we got 49 which proved that the card number is not valid.

Apple Pay Results

The first mobile payment option that member of the research group attempted the SSL Proxying on is Apple Pay, furthermore the Apple Wallet application. The first transaction on Apple Pay was through the SquareUp Reader. member of the research group enabled SSL Proxying and had Charles record the network traffic as shown in Figure 4. The highlighted line in Figure 4 represents that the certificate member of the research group had downloaded onto the iPhone 7 for SSL Proxying had been accepted. Before and after the transaction occurred, the research group had no errors, or any security measures detecting the SSL Proxying. The second transaction on Apple Pay has similar results. The only difference in the transaction network traffic was the highlighted line in Figure 5, which displays a notification that was sent to the customer's Visa card to indicate that the purchase was successful even with the SSL Proxying on.

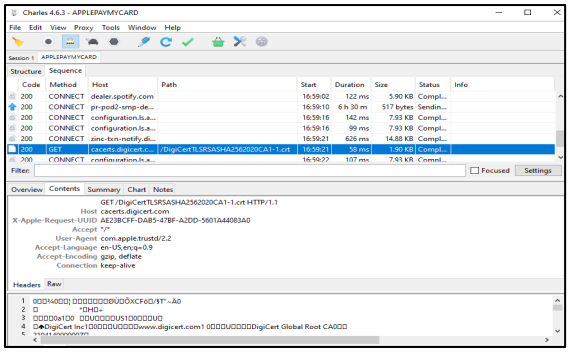

Figure 4: First Apple Pay transaction network traffic.

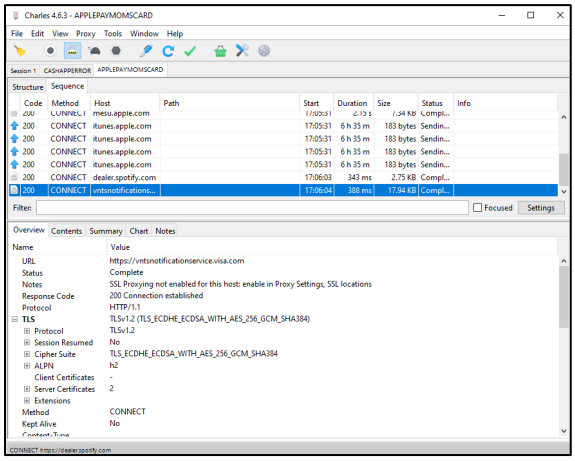

Figure 5: Second Apple Pay transaction network traffic.

Cash App Results

The second mobile payment option that members of the research group attempted this test on was Cash App. Cash App's results were not what members of the research group expected initially. When SSL Proxying was enabled, Charles and Cash App had responses different from Apple Pay. In Charles, it was observed that Cash App had initially accepted the certificate as shown in Figure 6. After Cash App initially accepted the certificate, the research group was planning on conducting the transaction but noticed the following message on an iPhone 7 (shown in Figure 7). After receiving this message, the notification was accepted. The research group also observed the error on Charles and was left with the following message shown in Figure 8. This message indirectly told Charles that SSL Proxying was detected and because it was detected, no further communication was established with Cash App. The second attempt of a Cash App transaction resulted in the same error message on the iPhone 7 and a different error message on Charles as shown in Figure 9.

A socket write error can be defined as a Windows operating system error that is due to a failure to secure the client's network layer to the receiving server. From this error it was concluded that the SSL Proxying was detected again by Cash App through the socket write error.

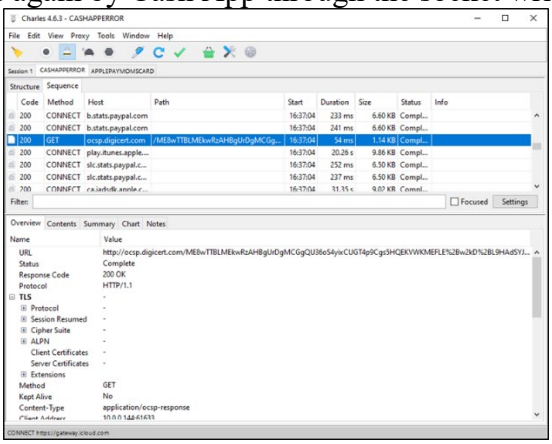

Figure 6: First Cash App transaction initial certificate.

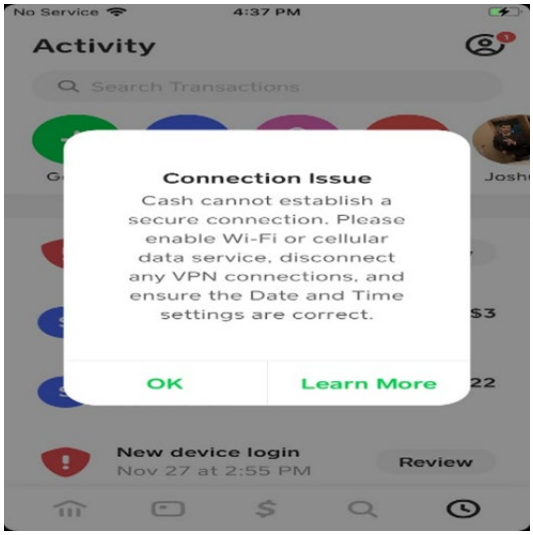

Figure 7: Error message when attempting to conduct Cash App transaction.

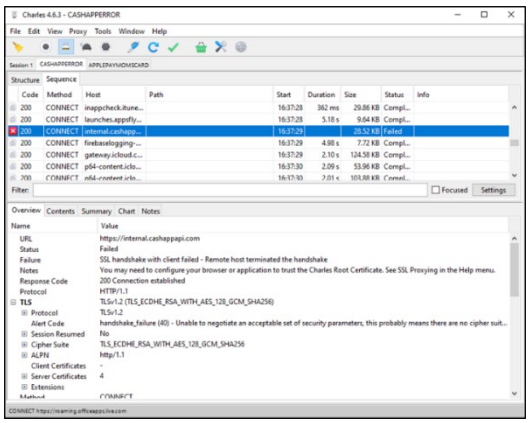

Figure 8: Cash App error message on Charles after first attempted transaction.

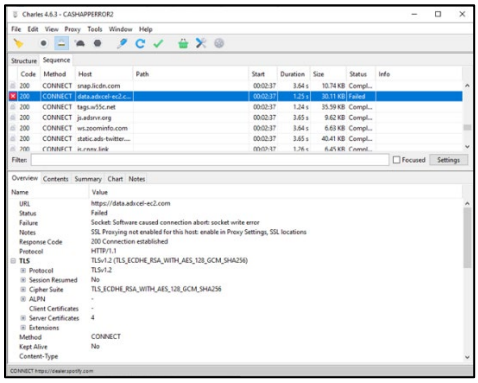

Figure 9: Cash App error message on Charles after second attempted transaction.

Venmo Results

The third mobile payment that the researchers used utilized for this test was Venmo. The first transaction on Venmo was a success. The transaction proceeded without any detection method or any error on the iPhone 7 application. While observing the network traffic it was noticed that the

Venmo ID number and name were in plain text after SSL Proxying as shown in Figure 10. When observing the network traffic from Venmo, the research group noticed that the certificate was checked twice and verified by Venmo as shown in Figure 11.

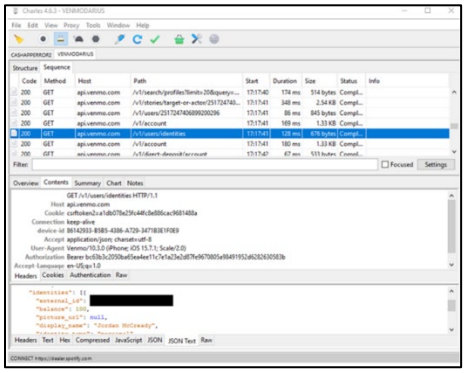

Figure 10: First Venmo transaction displaying personal Venmo ID and name

Google Pay Results

The first transaction of Google Pay was successful. On the Google Pay application, there were no errors or any signs of the SSL Proxying being detected. Figure 12 shows where Google Pay checked and verified the validity of the certificate. The second transaction on Google Pay was also a successful transaction. When observing the network traffic on Charles, the researchers noticed that there was a network packet that displayed the access token and the token ID of the transaction as displayed in Figure 13.

PayPal Results

The first attempt at a transaction on PayPal while SSL Proxying resulted in the following message on the iPhone 7 as shown in Figure 14. This message did not show up for a minute and thirty seconds after the research group opened the application on the iPhone 7. However, on Charles, the certificate was not visibly trusted or mentioned on the network traffic. One piece of information a member of the research group was able to obtain through the SSL Proxying is the pairing ID of a personal PayPal account as shown in Figure 15.

The second transaction was attempted on PayPal and resulted in the same error message as the first attempt. In this attempt however, the error message did not take a minute and thirty seconds to appear, but rather it appeared directly after opening the application. In Charles, the research group was able to observe that after SSL Proxying.

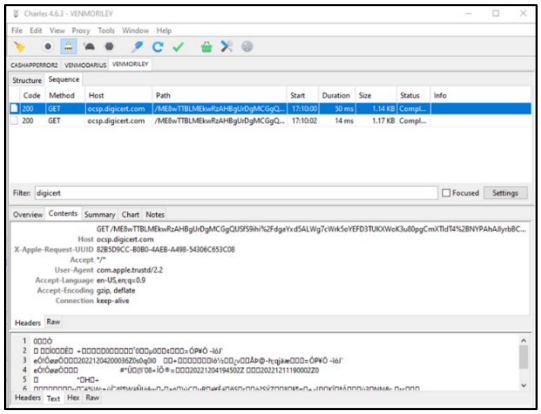

Figure 11: Second Venmo transaction which checked certificate twice and was verified by Venmo.

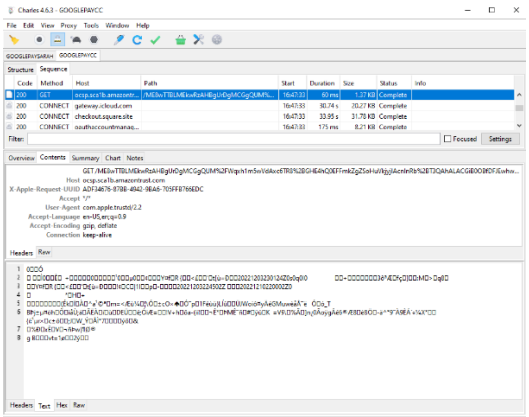

Figure 12: First Google Pay transaction with certificate verified and checked

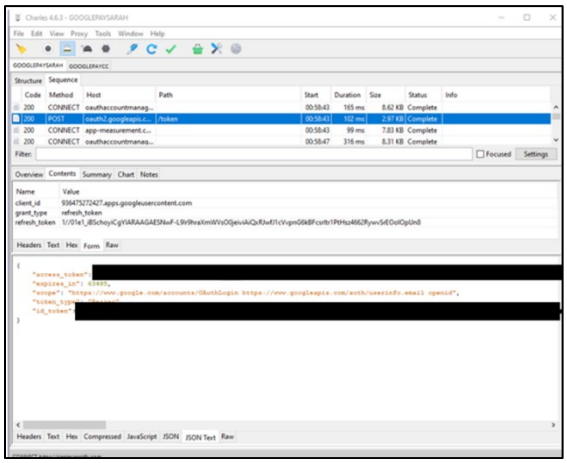

Figure 13: Second Google Pay transaction displaying access token and the token ID.

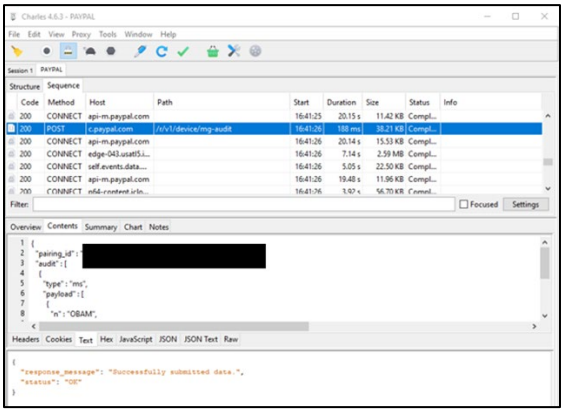

Figure 15: First PayPal transaction displaying pairing ID of personal PayPal account.

	Apple Pay	**Google Pay**	**Cash App**	**PayPal**	**Venmo**
Detected SSL Proxy	No	No	Yes	No	No
Verified Digital Certificate	Yes	Yes	No	No	Yes

Table 2: Summary of results.

DISCUSSION AND CONCLUSION

Mobile payments have become the quick and easy way to conduct a transaction in modern times. A comparison of five mobile payment options were highlighted: Apple Pay, Google Pay, Venmo, PayPal, and Cash App. This project explored two potential security scenarios to demonstrate how mobile payment companies could easily gather a customer's personal information.

Experimental Scenarios Conclusions

In the first scenario, the owner of Collectibles could access a variety of their customer's personal information just from a name and phone number. In this experiment, it is apparent from the results that the owner could potentially sell this information on the Dark Net or utilize it for blackmail. The availability of personal information from simply a phone number should not be as easy as it was found to be through this experimental scenario. Within minutes of research, the owner could dive deeper into a customer's family and create their own database of findings. This is a very real-life possibility and should make the audience aware that sometimes rewards programs are not worth your private information.

The occurrence of the second experimental scenario in the real world is not as likely as the first scenario. Hypothetically, the owner of Collectibles could validate if a random assortment of numbers was a valid card number. However, guessing a customer's number based on just the last four digits could be tricky for someone who the time does not have to sort through potentially thousands of card numbers to find a valid one. Even with just a card number, the owner would not have the expiration date of the card or the CVV (Card Verification Value) of the card. A person's

card number is still a private piece of information even without the CVV or expiration date. This scenario was essentially to show that with algorithms and time, finding a valid card number is a possibility.

Mobile Payment SSL Proxying Test Conclusions

For Apple Pay, the expected results varied from what was concluded following the security test. The SSL Proxying was not detected by Apple Pay and allowed for the two transactions to continue. This should be quite a concern to those who utilize Apple Pay. If an unethical hacker can utilize SSL Proxying on a public network, such as a Starbucks, they could potentially see decrypted Apple Pay transactions from anyone who is connected. This problem should be addressed by Apple due to the size of the company and the millions of customers at risk.

For Cash App, the expected results of the two transactions were the results the research group had hoped for concerning the mobile payment option. As soon as the application was launched on the iPhone 7, Cash App realized what was attempting to perform. This shows that with SSL Proxying on, Cash App was able to detect and stop a transaction from occurring, something Apple failed to do. This should make users of Cash App feel even more secure about their mobile payment option. It is also very interesting that Cash App was able to stop the second attempt of a transaction but with a different security error.

For Google Pay, the results were not what was expected, like Apple Pay. Both transactions on Google Pay were able to proceed without any errors or detection of the SSL Proxying. While Google Pay might not be as popular as some of the other options, the security of a user's network traffic is quite important. In the future, it is expected that Google Pay will address this issue/security risk. Google Pay users should be concerned about their network traffic not being as secure as they might initially believe it is. Google is no small company, so for SSL Proxying to not be detected, it was shocking.

For Venmo, the results were like Apple Pay and Google Pay. The two transactions were successfully able to take place and did not show any errors or detections of the SSL Proxying. This should concern the users of Venmo. If an unethical hacker can see a user's network traffic, they could obtain personal information without the user even knowing. This can be seen in Figure 10 where the name and Venmo ID are shown in plain text.

For PayPal, the results were like Cash App in a sense. PayPal was able to turn off the connection from Charles and the iPhone 7, but the network traffic did not specify a validation of a certificate in any portion of the traffic. The researchers found this quite strange and concluded that PayPal detected the SSL Proxying but did not inform Charles that the SSL Proxying was detected. It is also very concerning that the personal information was found so easily in the network traffic while utilizing SSL Proxying and was not even able to access any function of the application on the iPhone 7.

In conclusion, this project covered in depth the five mobile payments discussed and their security measures. Mobile payments are constantly evolving and will always have bugs to follow. These test transactions conclude that people should take their purchasing seriously and monitor their

mobile payment traffic if possible. How people perceive mobile payments in the coming years will determine if it is truly the future of payments. Citizens that utilize mobile payments regularly should be aware of potential security risks that come with purchasing with mobile payments. Even the most used and popular mobile payments are not flawless. When considering using mobile payments, the user should compare the different mobile payments out there to determine which one fits their needs the best. Mobile payments have the power to revolutionize how currency is handled or frighten people away from using it entirely due to security concerns.

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LONG TERM IMPLICATIONS OF A PANDEMIC ON STRATEGIC BRAND MARKETING AND CORPORATE SOCIAL RESPONSIBILITY(CSR)

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ABSTRACT

This study is designed to explore strategic brand marketing efforts and corporate social responsibility (CSR) initiatives resulting from the pandemic. A survey was administered to Generation Z and Millennials analyzing top brands from Interbrand's Best Global Brands 2022. The seven top brands selected for analysis were Apple, Amazon, Coca Cola, Disney, Nike, McDonalds, and Starbucks. Most of the participants were recruited through Cloud Research's Prime Panel during February of 2023 and linear regression models were employed for analyses. This study provided significant results into the critical importance of understanding the long-term effects of the pandemic on consumers' expectations of marketing and CSR efforts and the impact on consumer brand loyalty, brand trust and brand equity.

Keywords: COVID-19, Strategic Brand Marketing, Corporate Social Responsibility, Brand Equity, Brand Loyalty, Brand Trust, Generation Z and Millennials.

INTRODUCTION

The Covid-19 pandemic represents one of the most significant environmental changes in the modern marketing history, which has significantly impacted corporate social responsibility (CSR) and basic marketing and branding strategies (Balis, 2021). Marketers cannot ignore this pivotal global reality and most marketers agree that the marketing strategies developed and used during the COVID-19 pandemic will be important opportunities for their companies over the long term (Feldhaeuser, 2021; Moorman et al, 2021). The pandemic also truly challenged brand loyalty. As consumers increasingly demand greater personalization, companies will need to use more data and intelligence to sharpen their decision-making and drive greater relevance in their customer interactions to build stronger human connections to their brands (He and Harris, 2020; Balis, 2021).

Further, consumers, particularly Generation Z and Millennials, are demanding that businesses contribute to solving societal challenges and environmental problems while also being authentic and truthful in their strategic branding efforts (Kotler et al, 2021). This involves not only CSR initiatives, but also brand activism, where companies position themselves on social, political, and environmental issues that are not directly related to their business activity (Herzberg and Rudeloff, 2022). Therefore, to explore the long-term implications of strategic brand marketing and social responsibility efforts resulting from the pandemic, this study will implement a survey administered to Generation Z and Millennials analyzing top brands from Interbrand's Best Global Brands 2022.

LITERATURE REVIEW

Covid-19 and Strategic Brand Marketing Implications

As previously stated, The Covid-19 pandemic represents one of the most significant environmental changes in the modern marketing history, which has significantly impacted corporate social responsibility (CSR) and basic marketing and branding strategies (Balis, 2021). It was evident that 2020 was a year like no other and in 2021, companies had to redefine their strategies in terms of marketing and branding and businesses are still adapting and re-creating the new normal business strategy. Due to Covid-19, companies had to be reactive instead of proactive as marketers navigated this uncharted new business environment. It is clear the pandemic has redefined the efforts that marketers must implement to develop strategic advantages in the marketplace and to connect with consumers.

In today's dynamic business environment, corporations must recognize that their stakeholders, especially younger consumers who were greatly impacted by the pandemic, have higher expectations and are demanding more from businesses in terms of being ethical and socially responsible (e.g., Golob and Partnar, 2019). According to the 2022 Edelman Trust Barometer Special Report, 48% of respondents stated that their brand choices have changed in the last few years because of how a brand responded to Covid-19. And 62% of Generation Z stated that they want to work with brands to address societal issues (Edelman Trust Barometer Special Report, 2022). On CNBC's Closing Bell, Nike's CEO John Donahoe said the brand is "really focused" on attracting young consumers right now because they want "the most innovative products and wants brands that are globally relevant" (Hartmans, 2023).

Millennials, also known as Generation Y, were born between 1981 and 1996, ages 27 to 42 in 2023, represent about 25% of the US population (eMarketer, 2023). Millennials tend to purchase from brands that are socially responsible, and they will continue to be loyal to a brand if it benefits a cause or supports those in need. However, Millennials will stop purchasing a brand if it behaves unethically (Shetty et al, 2019). Millennials spending power in 2022 was approximately $65 billion (Wunderman Thompson, 2023). However, the younger generation, Generation Z, has spending power of almost $360 billion according to Forbes (2023). Further Generation Z will soon become "the most pivotal generation of consumers" and many will have large spending power by 2026 (eMarketer, 2023).

Generation Z consists of anyone born from 1997 to 2012 and makes up approximately 27% of the US population (Business Insider, 2023). Further businesses are trying to determine relevant marketing strategies to connect and engage with this younger generation. According to a 2017 Cone Gen Z CSR Study, 94% of Gen Z expect companies to address social and environmental issues and 63% of all respondents stated they would give socially responsible businesses the benefit of the doubt during a crisis. According to an interview with Generation Z consumers, "If a member of Gen Z does not agree with the morals of a company, many of them will boycott the products completely and get their friends to do so as well" (Fromm, 2022). This generation, which was critically impacted by the pandemic, is also socially and environmentally responsible, valuing diversity and equality, and aligning with brands that support those values and beliefs

(Fromm, 2022). If businesses want to sell to Generation Z, they must change first. This includes being authentic and socially responsible (Fromm, 2022).

Corporate Social Responsibility (CSR) and Brand Activism

Corporate social responsibility (CSR) as defined by Dahlsrud (2006), includes five dimensions, which are social, environmental, voluntariness, economic and stakeholders. The social and environmental dimension involves contributing to a better society and a cleaner environment; voluntariness is based upon actions focusing on ethics and values, beyond legal obligations; and economic refers to contributions to economic development. The stakeholder can be internal or external constituents, but for this study, the stakeholder focus is on the external stakeholder, the consumer, specifically Millennials and Generation Z.

Marketers recognize that corporate social responsibility (CSR) improves a company's image by focusing on high ethical standards and doing good things in the community, which fosters a level of trust in the company and creates meaningful bonds between the corporation and its stakeholders (SPI Group 25, 2021). Companies engaging in CSR-related branding activities must take an integrative approach and act on CSR expectations and issues and concentrate on relational brand elements and outcomes (Golob and Partnar, 2019). Further, to connect with consumers on a deeper level and focus on what is important to them, companies must not only engage in corporate social responsibility initiatives, but also consider going further by investing in the emerging marketing strategy of brand activism (e.g., Sarkar and Kotler, 2020).

Brand activism, according to Sarkar and Kotler (2020), "consists of business efforts to promote, impede, or direct social, political, economic, and/or environmental reform or stasis with the desire to promote or impede improvements in society" (p. 554). Brand activism goes beyond the concept of CSR, which is more values-driven and a long-term corporate strategy (Sarkar and Kotler, 2020, Vrendenburg et al, 2020). Further, brand activism is an emerging strategic marketing initiative that is more of a reactive strategy where corporations position themselves on social, political, and environmental issues that are not directly related to the core business activities (Moorman 2020; Sarkar and Kotler 2018, Sarkar and Kotler, 2020). The critical characteristics of authentic brand activism that set brands apart from competitors are being purpose oriented and values-driven, focusing on controversial and progressive issues, and embodying message and practice (Vrendenburg et al, 2020).

For example, iconic American brands, such as Coke, Disney, Starbucks, Nike, and Delta Airlines have taken positions on controversial issues from gun control, immigration, abortion, LGBTQ and voting laws. Further when corporations take these positions, the activism can become an integral and inseparable part of their brand (Poynton, 2021).

Disney, in response to pressure from stakeholders, both employees and consumers, publicly took a stand against The Parental Rights in Education *Act* (HB 1557), commonly referred to as the "*Don't Say Gay*" *Bill. In a* Facebook post in 2022, Disney wrote that the company opposes "any legislation that infringes on basic human rights" and stands "in solidarity" with LGBTQ+ employees "who make their voices heard today and every day" (CBS, 2022). Disney's former

CEO, Chapek also stated Disney would discontinue political donations in Florida and provide support for advocacy groups fighting similar legislation in other states (The Guardian, 2022).

In 2020, Coca Cola exhibited brand activism when the company displayed a message on the Times Square digital billboard in New York City saying "Together We Must take action to start change, demand justice, admit we can do more, stand as one, right wrongs, listen and create a better future and end racism. The sentiment was shared in social media as well, and "Together We Must" has become our pledge and our push for our company and our brands" (The Coca Cola Company, 2023). Further Ben & Jerry's campaigns on issues related to food ethics including non-GMO and animal wellbeing, which aligns with their brand purpose of values-based sourcing (The Marketing Society, 2023).

According to the 2022 Edelman Trust Barometer Special Report, 62% of Generation Z and 61% of Millennials believe that brands should make it easier for them to see what their values and positions on important issues are when they are about to make a purchase. This leads to our first exploratory research question:

RQ1: What is the impact of CSR/ brand activism on consumer purchase intention?

Consumer Perceived Ethically CPE), Brand Loyalty, Brand Trust/Esteem and Brand Equity

The concept of consumer perceived ethically (CPE) was first developed in the research literature by Brunk (2010a), which posits that if a company has respect for morals and values, is socially responsible, avoids causing harm, and carefully evaluates the positive and negative impact of its behavior before acting, then consumers tend to perceive a brand as ethical. Brunk (2010a) also concluded that the most influential dimension of consumers' ethical perceptions of the company and its brands is the company's stance on corporate social responsibility (CSR). More recent studies have concluded that brand activism also influences consumers' ethical perceptions of the brand (e.g., Sarkar and Kotler, 2020).

While there are a considerable number of studies on CSR, the research on specific CSR effects related to branding is not as extensive (e.g., Golob and Partnar, 2019). Further, studies on brand activism are limited and more research analysis into this evolving concept is required. In addition, Eyada (2020) recommended future research studies focusing on societal issues and concerns specially related to certain brands.

Keller (2003) defines brand loyalty under the concept of "brand resonance" which refers to the nature of customer-brand relationship and the extent to which customers feel that they can relate to the brand. Customers, with true brand resonance, have a high degree of loyalty and want to interact with the brand and share their experiences with others and recommend the brand to others (e.g., Aaker, 2004; Keller, 2003). Research has proven that CSR initiatives have a positive impact on brand loyalty while also serving as a critical tool in building and maintaining customer loyalty (e.g., Lu et al, 2020; Fandos-Roig et al., 2021). Further studies concluded that CSR positively enhances customer brand loyalty (Lin and Chung, 2019; Lee, 2019). This leads to our first hypothesis:

H1: Perceptions that a brand is CSR/Brand Activist has a positive influence on brand loyalty

According to Fandos-Roig et al (2021), CSR is critical to brand trust. Ahn and Kwon (2020) concluded that CSR initiatives increase the consumer's level of brand trust. Further, Dzupina et al. (2019) discovered that CSR activities develop a bond between customers and brands by increasing brand credibility. In the 2023 Edelman Trust Barometer Report, 62% reported that businesses are the only institutions that are only trusted. And business is now the sole institution that respondents perceive as both ethical and competent. Further, 63% indicated they buy or advocate for brands based on their beliefs and values, which includes both CSR and brand activism. This leads to our second hypothesis:

H2: Perceptions that a brand is CSR/Brand Activist has a positive influence on brand trust/esteem.

Brand equity as defined by Keller (1993) is "the differential effect of brand knowledge on consumer response to the marketing of the brand" (p. 8). Research has shown that corporate social responsibility has a positive effect on brand equity (e.g., Hur et al, 2014). In our current dynamic business environment, consumers, especially the younger generations, are also demanding that brands take a stand on sociopolitical issues. Further when brands align their activist messaging, purpose, and values with prosocial corporate initiatives and strategies, they engage in authentic brand activism, which leads to the greatest potential for social change and the largest gains in brand equity (Vrendenburg et al, 2020). This leads to the exploration of our final hypothesis:

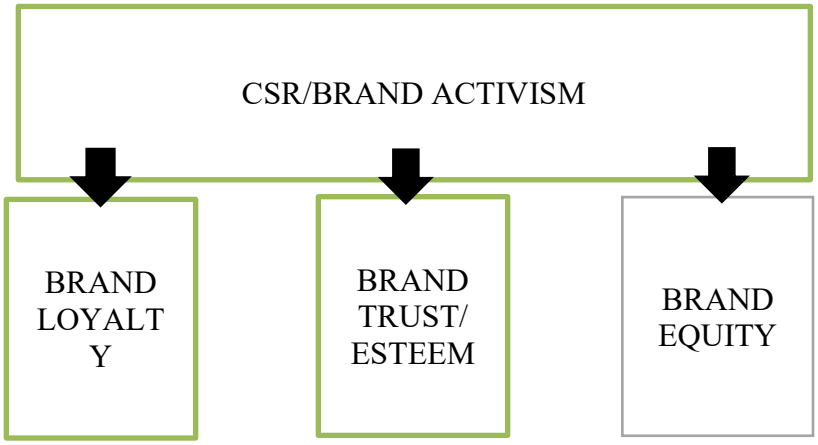
H3: Perceptions that a brand is CSR/Brand Activist has a positive influence on brand equity.

METHODOLOGY

Procedure and Sample

To test the proposed hypotheses (See Figure 1) and the research question, an online Qualtrics survey using Likert scales was administered during a one-week period in February 2023. A research company, Cloud Research, was employed to recruit most of the participants (250 total) through its Prime Panels, which provides access to quality participants with demographic targeting. The remainder of the participants were recruited through advertising courses at UNF. Stratified sampling by age group was employed in the sampling process to include only participants that were Millennials or Generation Z. After cleaning up the data by excluding surveys that were incomplete, a final sample of 280 valid responses were utilized in the data analysis.

Figure 1: The Hypothesized Model



Questionnaire and Measures

A 5-point Likert scale of importance was utilized to analyze the first research question exploring the impact of CSR/brand activism on purchase intention (See Table 1). The survey questions analyzing the three hypotheses were designed using scale items from the existing literature (See Table 2). The responses were recorded using a 7-point Likert scale of agreement from strongly disagree to strongly agree. There were seven brands selected for analysis from Interbrand's Best Global Brands, all representing a variety of industries: (1) Apple: Technology; (3) Amazon: E-commerce; (7) Coca Cola: Beverage; (9) Disney: Entertainment; (10) Nike: Sports Apparel; (11) McDonalds: Fast Food, and (51) Starbucks: Coffee Retailer. The corresponding number represents the position on Interbrand's list and the companies were selected based upon the following criteria: (1) commitment to CSR and/or brand activism initiatives: (2) the consumers' familiarity with these brands and (3) the representation of various industries.

Table 1: CSR/ Brand Activism and Purchase Intension

Likert Scale Components
How important is it to you that companies you purchase goods or services from do each of the following?
Show concern for societal issues
Show concern for environmental issues
Place emphasis on being trustworthy
Stand for something beyond profit
Have values similar to yours
Help you feel connected to others and your community
Take public stands on social issues
Take public stands on polical issues

Table 2: Brand Scale

Construct Variables
CSR/Brand Activism
This brand is a socially responsible brand (Brunk, 2012).
This brand seems to be environmentally responsible (Walsh and Beatty, 2007).
This brand appears to support good causes (Walsh and Beatty, 2007).
This brand contributes to society (Walsh and Beatty, 2007).
Brand Trust/Esteem:
I trust this brand (Chaudhuri and Holbrook's, 2001; Lau and Lee, 1999).
This brand is reliable (Villarejo-Ramos and Sanchez-Franco, 2005, Onurlubas and Ozturk (2020).
I respect this brand (Villarejo-Ramos and Sanchez-Franco, 2005).
Brand Loyalty:
I would recommend the product or service to others (Aaker, 2004).
Brand Equity:
Relevance: I can identify with this brand (Swaminathan et al, 2007, Keller, 2011, Kotler et al, 2021).
If I have to choose among different brands offering the same type of service, I would definitely choose this brand (Yasin et al, 2012, Yoo et al, 2000).

DATA ANALYSIS AND RESULTS

Construct Reliability

Construct reliability for the combined scale items of brand trust and brand equity were assessed through Cronbach's alpha coefficients and mean values were also calculated (See Table 3). All the Cronbach's alpha coefficients were higher than the acceptable value of .7, with most of the Cronbach's alpha coefficients in the .8 and .9 range of good to excellent. High values for Cronbach's alpha indicate good internal consistency of the items in the scale (George and Mallery, 2003).

Table 3: Construct Reliability and Mean Values

Construct	Items	Mean	Cronbach Alphas
Apple Trust/Esteem	Apple Trust	5.09	.923
	Apple Respect	5.12	
	Apple Reliable	5.28	
Apple Equity	Apple Identify	4.91	.852
	Apple Choose	4.93	

Amazon Trust/Esteem	Amazon Trust	5.55	.916
	Amazon Respect	5.66	
	Amazon Reliable	5.43	
Amazon Equity	Amazon Identify	5.31	.793
	Amazon Choose	5.36	
Coca Cola Trust/Esteem	Coca Cola Trust	5.23	.908
	Coca Cola Respect	5.23	
	Coca Cola Reliable	5.24	
Coca Cola Equity	Coca Cola Identify	5.02	.893
	Coca Cola Choose	5.04	
Disney Trust/Esteem	Disney Trust	5.04	.928
	Disney Respect	5.07	
	Disney Reliable	5.09	
McDonalds Trust/Esteem	McDonalds Trust	4.87	.945
	McDonalds Respect	4.88	
	McDonalds Reliable	4.85	
McDonald's Equity	McDonald's Identify	4.73	.892
	McDonald's Choose	4.68	
Nike Trust/Esteem	Nike Trust	5.15	.917
	Nike Respect	5.16	
	Nike Reliable	5.32	
Nike Equity	Nike Identify	5.06	.892

	Nike Choose	5.01	
Starbucks Trust/ Esteem	Starbucks Trust	5.03	.899
	Starbucks Respect	5.09	
	Starbucks Reliable	5.25	
Starbucks Equity	Starbucks Identify	4.96	.863
	Starbucks Choose	4.95	

Demographics

In terms of the age generation for the sample, 85% were in the age range of 27 to 42, classified as Millennials and 15% were in the age range of 18 to 26, classified as Generation Z. In terms of ethnicity, the sample consisted of 70% White Caucasians; 20% Black/African Americans; 5.7% Hispanic/Latino; 3.2% Asian/Pacific Islander, and .7% Native American. And lastly regarding gender, 62% of the respondents were females and 36% were males.

RQ1

In analyzing the overall research question addressing the impact of CSR/ brand activism on consumer purchase intention, the level of importance was explored for each of the CSR/brand activism components. Analysis of the mean values on the 5-point Likert scale of not very important to extremely important indicated that all factors fall into the moderately important to very important range (See Table 4). Results indicated that trustworthiness is the most important with a mean value of 3.90, followed by beyond profit with a mean value of 3.80 and similar values of 3.62.

Table 4: Results from RQ1

	Mean	**SD**	**SEM**
Society	3.29	1.241	.074
Environment	3.50	1.164	.070
Trustworthy	3.95	1.011	.060
Beyond Profit	3.82	1.113	.067
Similar Values	3.60	1.087	.065
Connection	3.43	1.180	.071
Social Issues	3.24	1.323	.079
Political Issues	3.05	1.332	.080

Note. n=280

In analyzing each factor, analysis of the importance of showing concern for societal issues, 44.6% of Millennials and Generation Z indicated it was very important to extremely important, followed by 30.4 % who felt it was only moderately important. Analysis of showing concern for environmental issues, 53.5% indicated it was very important to extremely important, followed by 28% who stated it was moderately important. Regarding emphasis on trustworthiness, 71.4% indicated it was very important to extremely important, and 21% indicated it was moderately important. Sixty five percent of Millennials and Generation Z indicated that it was very important to extremely important that a company stand for something beyond profit, followed by 21% that stated it was moderately important. Regarding similar values, 57.8 % indicated it was very important to extremely important, while 28% stated it was moderately important. Almost 50% of Millennials and Generation Z stated that companies that help you feel connected to others and your community were very important to extremely important, compared to 31% that felt it was moderately important. Further 44.7% stated it was very important to extremely important for companies to take a stand on social issues, while almost 30% said it was only moderately important. And lastly, almost 40% felt that it was very important to extremely important to take a stand on political issues, while 28% felt it was only moderately important.

Regression Analysis

To test the proposed model and the three hypotheses, linear regression analysis was utilized. The scale items for brand trust/esteem and brand equity were combined. The independent variables were the four scale items from the literature representing CSR and brand activism which included evaluation of the brand in terms of being socially responsible (Social), contributing to society (Society), being environmentally responsible (Environment), and supporting good causes (Good Causes). For H1, the dependent variable was brand loyalty.

Results indicated support for H1: Perceptions that a brand is CSR/Brand Activist has a positive influence on brand loyalty. Specifically, findings for Disney, Nike, and Starbucks indicated that all four variables, being socially responsible, contributing to society, being environmentally responsible and supporting good causes all positively influenced brand loyalty with significance levels of $p < .05$. Results for Apple, Amazon and Coca-Cola indicated that being socially responsible and contributing to society positively influenced brand loyalty with significance levels of $p < .05$. And lastly, results for McDonald's indicated that being socially responsible, contributing to society, and being environmentally responsible positively influenced brand loyalty with significance levels of $p < .05$. Analyzing H1 in terms of the beta coefficient, the larger the standardized beta coefficient, the more relative importance it assumes in predicting the dependent variable (Burns et al, 2017). The largest coefficient was Apple Society: β=.475, followed by McDonalds Society: β=.395 (See Table 5).

Table 5: H1: Brand Loyalty Supported Variables by Company

	Social	**Society**	**Environment**	**Good Causes**
Apple	β =.243 t=3.299 p=.001	β=.475 t=7.782 p=.000		
Amazon	β=.475, t=7.782 p=.000	β =.360 t=6.450 p=.000		
Coke	β =.349 t=4.542 p=.000	β =.292 t=3.608 p=.000		
Disney	β =.256 t=3.466 p=.001	β =.211 t=2.600 p=.010	β =.180 t=2.366 p=.019	β =.194 t=1.985 p=.048
McDonalds	β=.193, t=2.847 p=.005	β=.395 t=5.879 p=.000	β=.167 t=2.322 p=.021	
Nike	β=.153 t=2.199 p=.029	β=.223 t=3.160 p=.002	β=.282 t=3.582 p=.000	β=.195 t=2.381 p=.002
Starbucks	β=.174 t=2.198 p=.029	β=.268 t=3.767 p=.000	β=.150 t=2.187 p=.030	β=.214 t=2.719 p=.007

Note. Blank cells indicate no significance as p>.05.

For H2, the dependent variable was brand trust/esteem. Results indicated support for H2: Perceptions that a brand is CSR/Brand Activist has a positive influence on brand trust/esteem. Specifically, findings for Apple, Disney, McDonald's, and Nike indicated that all four variables, being socially responsible, contributing to society, being environmentally responsible and supporting good causes all positively influenced brand trust/esteem with significance levels of $p < .05$. Results for Amazon, and Coca-Cola indicated that three variables, being socially responsible, contributing to society, and supporting good causes all positively influenced brand loyalty with significance levels of $p < .05$. And lastly, results for Starbucks indicated that three variables, being socially responsible, contributing to society, and being environmentally responsible all positively influenced brand loyalty with significance levels of $p < .05$. Analyzing H2 in terms of the beta coefficient, the largest coefficient was Starbucks Society: β=.443, followed by McDonalds Society: β=.410
(See Table 6).

Table 6: H2: Brand Trust/ Esteem Supported Variables by Company

	Social	**Society**	**Environment**	**Good Causes**
Apple	β=.250, t=4.215 p=.000	β=.391 t=7.950 p=.000	β=.155 t=2.580 p=.010	β=.153 t=2.381 p=.018
Amazon	β=.259 t=3.544 p=.000	β=.357 t=7.036 p=.000		β=.198 t=2.769 p=.006
Coke	β=.271 t=4.477 p=.000	β=.360 t=5.561 p=.000		β=.216 t=3.664 p=.000
Disney	β=.211 t=3.591 p=.000	β=.312 t=4.820 p=.000	β=.145 t=2.399 p=.017	β=.145 t=2.399 p=.017
McDonalds	β=.203 t=3.657 p=.000	β=.410 t=7.441 p=.000	β=.144 t=2.435 p=.016	β=.203 t=3.415 p=.001
Nike	β=.262 t=5.010 p=.000	β=.307 t=5.801 p=.000	β=.264 t=4471 p=.000	β=.131 t=2.137 p=.033
Starbucks	β=.186 t=3.046 p=.003	β=.443 t=8.094 p=.000	β=.223 t=4.237 p=.000	

Note. Blank cells indicate no significance as p>.05.

For H3, the dependent variable was brand equity. Results indicated support for H2: Perceptions that a brand is CSR/Brand Activist has a positive influence on brand trust/esteem. Specifically, findings for McDonald's indicated that all four variables, being socially responsible, contributing to society, being environmentally responsible and supporting good causes all positively influenced brand equity with significance levels of $p < .05$. Results for Amazon, Nike and Starbucks indicated that three variables, being socially responsible, contributing to society, and being environmentally responsible all positively influenced brand equity with significance levels of $p < .05$.

Results for Apple indicated that three variables, being socially responsible, contributing to society, and supporting good causes all positively influenced brand equity with significance levels of $p < .05$. Results for Disney indicated that three variables, being socially responsible, being environmentally responsible and supporting good causes positively influenced brand

equity with significance levels of $p < .05$. And lastly, results for Coca-Cola indicated that only two variables, being socially responsible, and contributing to society positively influenced brand equity with significance levels of $p < .05$. Analyzing H3 in terms of the beta coefficient, the highest coefficients were Starbucks Society: β=.443; Disney Good Causes: β=.424, and Amazon Society: β=.404 (See Table 7).

Table 7: H3: Brand Equity Supported Variables by Company

	Social	**Society**	**Environment**	**Good Causes**
Apple	β=.250 t=3.400 p=.001	β=.353 t=5.779 p=.000		β=.190 t=2.383 p=.018
Amazon	β=.254 t=3.680 p=.000	β=.404 t=8.409 p=.000	β=.232 t=3.171 p=.002	
Coke	β=.279 t=3.975 p=.000	β=.363 t=4.837 p=.000		
Disney	β=.220 t=3.347 p=.001		β=.158 t=2.335 p=.020	β=.424 t=4.869 p=.000
McDonalds	β=.245 t=3.966 p=.000	β=.245 t=4.000 p=.000	β=.258 t=3.933 p=.000	β=.181 t=2.734 p=.007
Nike	β=.309 t=5.066 p=.000	β=.165 t=2.669 p=.008	β=.305 t=4.430 p=.000	
Starbucks	β=.186 t=3.046 p=.003	β=.443 t=8.094 p=.000	β=.2223 t=4.237 p=.000	

Note. Blank cells indicate no significance as p>.05.

DISCUSSION AND IMPLICATIONS

For RQ1, results indicated that all the CSR and brand activism factors were important to Millennials and Generation Z as all the mean values were moderately important to very important. Further, trustworthiness was the most important with 71% indicating that it was very to extremely important to them, closely followed by 65% stating the need for businesses to stand

for something beyond profit and almost 58% stating that businesses must align with their values. This supports the findings in the Edelman Trust Report (2023) that businesses are the only trusted institution that has responded to the social and economic consequences of COVID-19. Also, according to Home Depot's SVP/CMO, it is important to look to the long term and really understand the impact of our brand. This includes understanding the brand purpose and creating an emotional connection with the next generation of homeowners. Further she believes that "Consumers will continue to support brands that share their values" (Molly Battin, SVP, CMO, Home Depot, 2023). Brands that aspire to true leadership must not only deliver exceptional experiences for their customers, but are increasingly expected to act with integrity, doing the right thing by people and planet (Interbrand, 2023).

For H1 and brand loyalty, results indicated significance in either three or four variables. Specifically for three of the brands, Disney, Nike, and Starbucks, all four CSR/brand activism variables, being socially responsible, contributing to society, being environmentally responsible and supporting good causes positively influenced brand loyalty. This finding is not surprising as Disney, Nike and Starbucks have all exhibited brand activism (Poynton, 2021). In terms of the highest absolute beta coefficient, Apple Society was the highest (β=.475), followed by McDonalds Society (β=.395). This indicates that consumer perceptions that Apple is a socially responsible brand is the most important CSR/brand activism variable in terms of influence on brand loyalty.

Results also support the findings that consumers, particularly Gen Z and millennials, are demanding that businesses contribute to solving societal challenges and environmental problems while also being authentic and truthful in their strategic branding efforts (Kotler et al, 2021). This finding is also in line with previous research CSR initiatives and the positive impact on customer brand loyalty (e.g., Fandos-Roig et al., 2021; Lee, 2019; Lin and Chung, 2019; Lu et al, 2020).

For H2 and brand trust/esteem, results for Apple, Disney, McDonald's, and Nike indicated that all four variables, being socially responsible, contributing to society, being environmentally responsible and supporting good causes all positively influenced brand trust/esteem.
In terms of the highest absolute beta coefficient, Starbucks Society was the highest (β=.443), followed by McDonalds Society (β=.410). This indicates that consumer perceptions that Starbucks is a socially responsible brand is the most important CSR/brand activism variable in terms of influence on brand trust/esteem.

These findings are consistent with researchers' conclusions that CSR initiatives and brand activism are essential in building consumer brand trust (e.g., Ahn and Kwon, 2020; Fandos-Roig et al, 2021). Further, it supports Sarkar and Kotler (2020) conclusion that brands are increasingly positioning themselves boldly on societal issues. In addition, according to Kotler et al (2021), "Leading companies and their CEOs are expected not only to navigate business topics but also to address social, economic, and political issues. Company brand plays a special role because it can serve as a trust anchor, as a point of orientation" (p.1).

For H3 and brand equity, McDonald's was the only brand with all four variables, being socially responsible, contributing to society, being environmentally responsible and supporting good

causes, positively influencing brand equity. Amazon, Nike, and Starbucks indicated that three variables, being socially responsible, contributing to society, and being environmentally responsible all positively influenced brand equity. In terms of the highest absolute beta coefficient, Starbucks Society was the highest (β=.443), followed by Disney Good Causes (β=.424) and Amazon Society (β=.404). This indicates that consumer perceptions that Starbucks is a socially responsible brand is the most important CSR/brand activism variable in terms of influence on brand equity.

According to Herzberg and Rudeloff's (2022) study, brand activism can increase brand equity with certain risk implications; however, if corporations want to avoid risks, findings also indicate that CSR can increase brand equity similarly. But Vrendenburg et al (2020) concluded that brand activism can lead to the highest increase in brand equity. Further, Herzberg and Rudeloff (2022) conclude that the importance of brand activism is going to increase as more consumers, especially the younger generation, expect companies to take a stand on societal issues and not remain silent.

This study provides practical, long-term implications for marketers in today's dynamic and polarized businesses environment. Consumers' expectations of marketing and strategic branding have evolved and changed due to the pandemic, especially in the younger generations. The younger consumers who were greatly impacted by the pandemic, have higher expectations and are demanding more from businesses in terms of being ethical and socially responsible (e.g., Golob and Partnar, 2019). Marketers had to redefine branding strategies during the pandemic and the findings in the study indicated that CSR activities and brand activism initiatives are important in influencing a brand's loyalty, trust/esteem, and equity within the younger generations. Marketers must realize that brands need to show up differently in 2023 and beyond with the growing importance of authentic, value-driven brands (Rae Wang, Dairy Queen Florida). Further, the findings are consistent with a study conducted by Pew Internet (2020), that concluded like Millennials, Generation Z has also demonstrated a higher commitment to ethical and environmental issues than the older generations. According to Kotler et al (2021), Generation Z, more than previous generations, considers brand activism activities crucial and, they perceive companies as a collaboration partner to bring about change. Therefore, it is critical that marketers understand how to develop relevant branding strategies to effectively connect and engage with this significant younger generation. Finding out how to appeal to Gen Z will take new perspectives.

Secondly, brands will need to be authentic in their CSR and brand activism strategies and stay true to their brand purpose. Purpose has become one of the most influential terms in business in recent years, and its popularity has substantially increased during the global COVID-19 pandemic (Trapp, 2021). Purpose is an organization's denominator that inspires stakeholders to work together to achieve a common goal that provides social good and goes beyond making a profit (Business Roundtable, 2019). This is also in line with stakeholder theory and the view that a company's actions during a crisis are critical as a stakeholders' perceptions, of a quality relationship relies heavily on how an organization behaves during times of crisis (Chang & Shen, 2020). Further according to Qin et al (2022), "In the uncommon occurrence of all companies experiencing the same crisis, such as the global COVID-19 pandemic, organizations'

actions may especially impact stakeholders' perceptions of purpose-driven organizations" (p.429).

This year and beyond are going to be really challenging for marketers according to Lindsay Morgan, CMO, Pizza Hut, Yum Brands. The issue is how brands are going to be there for their customers and how brands are going to be consistent and provide comfort and ease that is in line with what your brand does (Lindsay Morgan, CMO, Pizza Hut, Yum Brands). Brand activism can necessitate engaging in controversial issues and taking a stand, which can be risky for corporations. Therefore, it is critical that corporations have a strong and clear brand purpose before adopting brand activism strategies as brand credibility can suddenly erode when inconsistencies become apparent (Herzberg and Rudeloff, 2022).

LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. First, the study only examined seven corporations from the Interbrand 2023 Best Global Brands List. Future research could expand and examine more brands. Secondly, the study was limited in the industry representation and only included technology, e-commerce, beverage, entertainment, sports apparel, fast food, and coffee retailer. Future studies could expand the breadth and include a more industry categories for better representation. And lastly, this study included approximately 300 participants, Millennials and Generation Z over a one- week period. Future research could include more participants and could also compare older and younger generations.

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