



CENTRAL BANK OF EGYPT  
Egyptian Banking Institute

# BEHAVIORAL ECONOMICS RESHAPING THE BANKING SECTOR

# Table of Contents

**Abstract**..... 2

**Introduction**..... 3

**Overview of Behavioral Economics** ..... 3

**The Introduction to the Banking Sector**..... 4

**Research Aim**..... 5

**Chapter 1: Understanding Behavioral Economics and Its Key Concepts**..... 5

    What is a “nudge” in behavioral economics? ..... 5

    Principles of Behavioral Economics ..... 6

**Chapter 2: Behavioral Economics and Consumer Behavior in Banking** ..... 8

    Behavioral economics and savings ..... 8

    Behavioral Economics and loans..... 10

    Behavioral economics and investments ..... 13

**Chapter 3: How Behavioral Economics Affects Banking?**..... 14

    The Impact of Behavioral Economics on Banking Consumer Choices..... 15

**Chapter 4: Industry Real Examples** ..... 19

**Chapter 5: Ethical Considerations and Challenges** ..... 23

**Conclusion** ..... 26

**Future Directions** ..... 26

**References** ..... 28

## Abstract

Behavioral economics, a field that integrates psychological insights with economic theory, has increasingly influenced the banking sector in recent years. While traditional economic models have long assumed that consumers make decisions based on rational self-interest, behavioral economics acknowledges the various cognitive biases and heuristics that shape decision-making. This paper examines how the banking industry has adapted to these insights, leading to the design of more customer-centric products, the application of behavioral nudges, and the promotion of financial literacy. The paper also discusses ethical concerns surrounding the use of behavioral interventions in banking, such as the manipulation of consumer choices and privacy issues. Looking ahead, it is clear that behavioral economics will continue to play a pivotal role in reshaping the banking landscape, offering personalized, accessible, and more effective financial services while presenting new challenges in consumer protection and regulation.

## Introduction

### Overview of Behavioral Economics

Behavioral economics is an interdisciplinary field that combines insights from psychology and economics to understand how individuals make economic decisions. Traditional economic theories, such as those underlying classical finance, assume that people are rational actors who make decisions aimed at maximizing their utility based on the available information. However, behavioral economics challenges this assumption by exploring how cognitive biases, emotional influences, and social factors often lead individuals to make irrational choices. Beyond the theories put forth by traditional economics, behavioral economics recognizes the shortcomings and constraints of human nature and seeks to capitalize on them to influence behavior positively.

The psychologist Daniel Kahneman, who won the Nobel Memorial Prize in Economic Sciences in 2002, and his longtime partner Amos Tversky are regarded as the pioneers of behavioral economics. Collectively, they discovered several behavioral biases and heuristics that influence our decision-making.

Pioneers like Daniel Kahneman<sup>1</sup> and Amos Tversky<sup>2</sup>, through their work on Prospect Theory, showed that individuals' decisions deviate from rationality due to cognitive biases such as loss aversion, overconfidence, and framing effects. These insights have profound implications for financial institutions, as they reveal that customers' decisions—ranging from saving and investing to borrowing and spending—are influenced by much more than just rational thought<sup>3</sup>.

Heuristics are straightforward mental shortcuts that we frequently employ when making decisions, particularly when confronted with overly complicated issues where we tend to concentrate only on the essential elements. This way of thinking frequently causes us to “fall” into mistakes known as cognitive biases<sup>4</sup>.

---

1. <https://thedecisionlab.com/thinkers/economics/daniel-kahneman>

2. <https://www.sciencedirect.com/topics/psychology/prospect-theory#:~:text=In%20the%20late%201970s%2C%20Daniel,risk%20seeking%20or%20risk%20averse.>

3. <https://blogs.lse.ac.uk/businessreview/2024/05/28/a-lookback-at-the-collaboration-that-paved-the-way-for-behavioural-economics/#:~:text=Psychologists%20Daniel%20Kahneman%20and%20Amos,to%20heuristics%2C%20biases%20and%20frailties.>

Let's begin by looking into an illustration. Using availability heuristics, we assess an event's frequency by considering how easily we can recall an example of it. This explains why, even though the chances of dying in a car accident are significantly lower than those of dying in an airplane, more people are terrified of flying than driving. However, because they are uncommon and thus noteworthy occurrences, airplane accidents are frequently reported in the media. As a result, people tend to worry more about boarding a plane because they believe that plane crashes are far more relevant than car crashes<sup>4</sup>.

### **The Introduction to the Banking Sector**

The banking sector has traditionally been driven by models that rely on the assumption of rational decision-making. The design of products such as savings accounts, loans, and mortgages, as well as the marketing strategies employed, were based on the idea that consumers would act in their best financial interests if provided with sufficient information. Banks focused on offering the best rates and clear terms to attract customers, believing that transparency would lead to optimal consumer decisions.

However, the introduction of behavioral economics to the banking sector has reshaped how banks view their customers. It is now understood that customers do not always make decisions that align with their long-term best interests. Instead, they often fall prey to biases and heuristics that influence their choices. In response, banks have increasingly turned to behavioral insights to improve their product offerings, customer relationships, and marketing strategies.

We must move beyond data analytics and concentrate on how and why people make decisions if we want users to act on data, increase, or even just start saving, investing, and even just thinking about their retirement. This is where behavioral economics enters the picture, making inferences from the psychology of human nature, which underpins both good and bad behavior, and the reasons behind people's financial decisions. How we rationalize our purchases, how we save money or make plans for the future, and, of course, how we can deceive ourselves into going over budget<sup>5</sup>.

### **Research Aim**

This paper aims to explore the role of behavioral economics in reshaping the banking sector. It will investigate how cognitive biases and heuristics influence consumer behavior in banking, how financial products are designed using these insights, and how marketing strategies are adapted to align with customers' psychological tendencies. Real-life case studies will illustrate the practical application of behavioral economics in banking, while the ethical considerations surrounding these approaches will be discussed.

## **Chapter 1: Understanding Behavioral Economics and Its Key Concepts**

In order to comprehend how and why people act in certain ways in the real world, behavioral economics integrates aspects of psychology and economics. Neoclassical economics, on the other hand, makes the assumption that most people have clear preferences and base their well-informed, self-interested decisions on them.

---

4. Martín, M. and Valiña, M. (2023) Heuristics, Biases and the Psychology of Reasoning: State of the Art. *Psychology*, 14, 264-294. doi: 10.4236/psych.2023.142016.

5. <https://www.nottingham.ac.uk/business/who-we-are/centres-and-institutes/gcbfi/documents/researchreports/paper92.pdf>

Behavioral economics, which was influenced by the seminal work of Nobel laureate and University of Chicago scholar Richard Thaler, studies the discrepancies between what people “should” and actually do, as well as the effects of those actions.

### **What is a “nudge” in behavioral economics?**

Nudge Theory suggests altering the decision environment to affect group or individual behavior and decision-making. It has its roots in behavioral economics, social psychology, and related sciences. To promote desired behaviors without using more conventional strategies like education or enforcement, it recommends making minor adjustments to the choice architecture. This strategy, made popular by Richard Thaler and Cass Sunstein's 2008 book<sup>6</sup>, entails gently changing the surroundings to trigger automatic thought processes that guide people toward desired results, thereby raising the probability of particular choices or actions. Nudge: Improving Decisions about Health, Wealth, and Happiness, Thaler's 2008 book co-authored with Cass Sunstein, a former U Chicago law professor who is currently at Harvard University, popularized his nudge theories. “Libertarian paternalism” is the formal term Thaler and Sunstein use to characterize a scenario centered around nudges; it is paternalistic. After all, it promotes particular behavior but is libertarian because it maintains choice<sup>7</sup>.

### **Principles of Behavioral Economics<sup>8</sup>**

- **Bounded Rationality:** The idea of bounded rationality recognizes that people don't always make completely logical choices. Rather, their capacity for thought and comprehension is limited. Therefore, they frequently use simplified ways of thinking to make decisions rather than always choosing the best option.
- **Framing:** When you respond to a given option differently depending on how it is presented to you, this is known as the framing effect. When a choice is presented as either positive or negative, the value proposition is altered, even though the choice has the same value.
- **Heuristics:** We frequently use shortcuts when making decisions. We refer to these shortcuts as heuristics. We make decisions based on quick mental tricks or rules of thumb rather than carefully considering all the options. Although it speeds up decision-making, it occasionally results in errors.
- **Loss Aversion<sup>9</sup>:** People who are loss-averse dislike losing things. Their fear of losing something is greater than their joy at acquiring something comparable. They may behave cautiously as a result of this fear of losing, avoiding risks even when there may be rewards.
- **Overconfidence Effect:** The overconfidence effect occurs when we believe we are more skilled than we are. The overconfidence effect is this. It indicates that we have a propensity to overestimate our abilities, which may result in choices that are not as sound as we believe.
- **Anchoring:** We tend to remember the first thing we learn about a subject. Anchoring is that. That initial piece of information can still significantly impact our decision-making even if we later acquire additional information. It serves as the foundation for our thoughts.

6. [https://www.routledge.com/An-Analysis-of-Richard-H-Thaler-and-Cass-R-Sunsteins-Nudge-Improving-Decisions-About-Health-Wealth-and-Happiness/Egan/p/book/9781912128037?srsltid=AfmBOoqf11DO97HZGut1fRfG0hNaSYexF3nzzXu\\_0jU2FLiOpnOSxsRH](https://www.routledge.com/An-Analysis-of-Richard-H-Thaler-and-Cass-R-Sunsteins-Nudge-Improving-Decisions-About-Health-Wealth-and-Happiness/Egan/p/book/9781912128037?srsltid=AfmBOoqf11DO97HZGut1fRfG0hNaSYexF3nzzXu_0jU2FLiOpnOSxsRH)

7. <https://news.uchicago.edu/explainer/what-is-behavioral-economics>

8. Botti, S. & Iyengar, S. (2006). “The dark side of choice: When choice impairs social welfare,” *Journal of Public Policy and Marketing*, 25(1), 24–38.

9. Kahneman, Daniel, and Amos Tversky. “Prospect Theory: An Analysis of Decision Under Risk.” *Econometrica* 47, no. 2 (1979): 263–291.

- **Herding:** Herding is the practice of occasionally simply copying what other people are doing without giving it much thought. It frequently occurs in settings such as the stock market, where individuals purchase or sell stocks merely because that is what other people are doing.
- **Mental Accounting:** Our attitudes toward money are not always consistent. Sometimes, depending on its origin or our intended use, we place money in different mental buckets. We mentally classify money rather than viewing it as simply money, which can influence how we spend it.
- **Present bias:** The tendency to select a smaller reward now rather than a larger one later is known as present bias.
- **Status quo bias:** Status quo bias describes why we occasionally might want things to remain the same. This frequently leads to people continuing to follow a previous course of action or doing nothing at all.
- **Herd behavior:** This is a relatively simple bias that reflects the tendency of people to mimic what everyone else is doing and follow the consensus. It represents the concept of “wisdom of the crowd”

**Common biases relevant to banking include:**

- **Loss Aversion:** This is the tendency to avoid losses rather than acquire equivalent gains. In the context of banking, this can explain why customers are more reluctant to switch to a new bank, even if the terms are better. It can also influence consumers’ reactions to fees or negative account balances.
- **Anchoring:** When individuals make decisions based on an initial reference point or “anchor.” For instance, if a customer sees a loan offered at 5% interest after being shown an offer at 8%, they may perceive the 5% loan as a great deal, even though it might still be above the market rate.
- **Status Quo Bias:** This bias leads people to prefer the current state of affairs, often leading to inertia in financial decisions. For example, individuals may continue to keep their savings in low-interest accounts, even when better options are available, simply because they are used to the status quo.
- **Mental Accounting:** Banks have capitalized on this concept by designing products that encourage saving through earmarked accounts, such as emergency funds or retirement savings, which align with the consumer’s mental accounting tendencies.
- **Nudging:** In banking, nudging has encouraged behaviors such as saving and investing. A well-known example is the automatic enrollment in retirement savings plans, where employees are automatically enrolled in pension plans unless they opt out. This simple nudge leverages the status quo bias, increasing savings participation rates significantly.

## Chapter 2: Behavioral Economics and Consumer Behavior in Banking

### Behavioral economics and savings

Historically, individuals have struggled to save money, often prioritizing immediate gratification over long-term financial security. However, behavioral economics has highlighted the importance of addressing this gap by designing policies and financial products that align with consumers' psychological tendencies. One major intervention in this area was the introduction of Save More Tomorrow (SMarT), a program developed by Richard Thaler and Shlomo Benartzi. The program automatically increases employees' savings rates over time, with the increase linked to salary raises. This approach overcomes procrastination and the temptation to spend more as income rises, leading to significant increases in savings rates.

The program's basic idea is simple: participants pledge up front to set aside a portion of any future pay increases for retirement. We present data from the SMarT program's initial three implementations. The following are our main conclusions from the initial implementation, which has been in place for four yearly raises: During 40 months, the average saving rates for SMarT program participants rose from 3.5 percent to 13.6 percent, (1) a significant percentage (78 percent) of those offered the plan joined, and (2) the majority of those enrolled in the SMarT plan (80 percent) stayed in it through the fourth pay raise<sup>10</sup>.

The perception of the need to save is complicated by the inability to envision the future and our overconfidence in ourselves. Even though people are aware that saving for the future will yield greater benefits, they still prefer the satisfaction of spending now. People are unable to prioritize saving because there aren't any concrete examples of it in our everyday lives<sup>11</sup>.

According to behavioral economics, we are faced with obstacles in this essential role by a number of cognitive biases.

- Present bias: As mentioned before, the tendency for people to favor a smaller immediate reward over a larger one in the future is known as present bias. For instance, we might rather receive \$10 today than \$15 tomorrow. When making decisions, this bias is strongly linked to impatience or instant gratification.
- Attentional bias: The term "attentional bias" describes our inability to weigh all options when making a significant decision. Despite our desire to believe that we consider every option, the truth is that we frequently ignore some choices and potential outcomes.
- The lack of tangible references in our daily life related to saving prevents us from seeing it as a priority<sup>12</sup>.
- Projection bias: People's mistaken belief that their preferences will not change over time is known as projection bias.

Three primary behavioral economics-based strategies were created in the financial industry to lower savings barriers:

---

10. Shlomo Benartzi & Richard Thaler, 2004. "Save more tomorrow: Using behavioral economics to increase employee saving," Natural Field Experiments 00337, The Field Experiments Website.

11. Behavioral economics Applied to the financial sector, April 2021, by EY global Ernst & Young Global Ltd. <https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/services/strategy/documents/ey-behavioral-economics-applied-to-financial-sector-4-2021.pdf>

12. Ibid

- **Make the advantages observable:**

Setting short-term goals is a common practice in banking and savings apps. Sub-accounts can be made with more attainable objectives, like a vacation, rather than retirement savings, which might seem like an unrealistic goal.

- **Make the action easier:**

For a variety of reasons, such as our overemphasis on the present, our overconfidence in the future, and the absence of concrete references, we have observed that saving is a challenge. Banks can use action reminders, gamification, and rewarding customers with extra benefits to improve saving behavior. Displaying potential future needs through objective data is also crucial when highlighting the advantages of savings.

- **Provide references:**

One effective strategy for getting consistent savings from clients is to provide ongoing feedback, recall prior successes, or use peer social references.

### **Behavioral Economics and loans**

The irrational tendencies of consumers can also manifest in borrowing decisions. For instance, consumers often fall prey to optimism bias, believing they are less likely to default on loans than they are. This bias can lead to over-borrowing or underestimating the risks of loans, particularly in the context of mortgages and credit cards. Banks, aware of these biases, have begun to design products that better manage lending risks. For example, some banks use behavioral insights to offer more transparent loan terms or to implement automatic payment reminders to prevent defaults.

Consumers are unsure about how much they will borrow and how that will affect their cash flow. Additionally, they worry about the loan-buying process, frequently believing it to be more difficult and time-consuming than it is.

Two key cognitive factors that prevent consumers from engaging in these kinds of processes can be explained by behavioral economics:

- **Loss aversion:** The following example effectively illustrates loss aversion, a cognitive bias.

Imagine that you can choose from one of the following options. Which one do you prefer? A. 50% chance of going on a three-week vacation B. A guaranteed week's holiday C. You have no preference<sup>13</sup>.

Many of us would pick option (b) in this case, even though option (a) offers the possibility of a better result, the 50% chance of taking a three-week vacation, or 1.5 weeks, giving us more time to enjoy a paradise beach than the safe week of option (b). But psychologically, the joy of gaining a little more time is twice as painful as the fear of losing the holiday entirely. As a result, people are more inclined to make choices that will prevent losses than those that will result in gains<sup>14</sup>.

---

13. Kahneman D. Tversky A., 1979

14. Behavioral economics Applied to the financial sector, April 2021, by EY global Ernst & Young Global Ltd. <https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/services/strategy/documents/ey-behavioral-economics-applied-to-financial-sector-4-2021.pdf>

- **Availability heuristics:**

It explains how we assess an event's likelihood based on how simple it is to think of an example or remember an experience related to it. The shark instantly springs to mind when we think of a dangerous animal, and news reports or films about dangerous sharks are to blame. However, the cow is the most deadly animal, with 22 victims a year in the US<sup>15</sup>.

Transactional data from customers can give us the information we need to communicate when it's most appropriate. Additionally, we can reduce attrition by behaviorally designing the digital choice architecture<sup>16</sup>.

- **Behavioral communication<sup>17</sup>:**

Banks can use behavioral segmentation in addition to propensity segmentation to learn about customer preferences and target communications accordingly. Activating availability heuristics, the previously mentioned mental shortcut, requires this hyperpersonalization. How are banks able to do that? By determining their financial footprints, they can predict the needs of their customers.

- **Decision-making architecture<sup>18</sup>:**

Consumer preferences are formed at the moment of decision-making based on how the options are presented; they are neither fixed nor predetermined.

Numerous kinds of frames can be created to sway the choice made during the loan application process. A few instances are:

- Provide predetermined loan recommendations with the most requested configurations.
- Simulate the product with a greater emphasis on the installment when the total amount is small.
- To create a premium loan, incorporate value-added products like payment protection insurance.

### **Behavioral economics and investments**

Customers face numerous cognitive obstacles when it comes to investing. For instance, there might be an inconsistency between the expectations and the investment's eventual result due to a misalignment between the investment profile and market reality.

When there is a wide and complicated selection of investment products available, customers also tend to put off acting. We refer to this as the paradox<sup>19</sup> of choice. Customers frequently base their investment decisions on recommendations, news, or success stories because they believe that investments closer to home are safer, such as stocks in their home country. Lastly, even though the original plan was a long-term investment, customers typically disinvest when the stock market declines.

Nonetheless, how we invest is just as important as where we invest. In this sense, the main bias is mental accounting.

---

15. [https://personetics.com/wp-content/uploads/2022/04/Behavioral-Economics-and-banking-eBook.pdf?utm\\_campaign=Act%20eBook%202022&utm\\_medium=email&\\_hsenc=p2ANqtz--bK-zvvnv38ztB04dAXAmvmwrW7HhwMg96RP\\_okS63dTuvYkq\\_2\\_M2Ee2T6uluV-LglZ2zvLJcaGwibjGqgerMcGzLuKA&\\_hsmi=223115242&utm\\_content=223115242&utm\\_source=hs\\_automation](https://personetics.com/wp-content/uploads/2022/04/Behavioral-Economics-and-banking-eBook.pdf?utm_campaign=Act%20eBook%202022&utm_medium=email&_hsenc=p2ANqtz--bK-zvvnv38ztB04dAXAmvmwrW7HhwMg96RP_okS63dTuvYkq_2_M2Ee2T6uluV-LglZ2zvLJcaGwibjGqgerMcGzLuKA&_hsmi=223115242&utm_content=223115242&utm_source=hs_automation)

16. Witynski, M. nd. 'Behavioral Economics, Explained'. UChicago News. [Online] Available: <https://news.uchicago.edu/explainer/what-is-behavioral-economics>

17. <https://www.nottingham.ac.uk/business/who-we-are/centres-and-institutes/gcbfi/documents/researchreports/paper92.pdf>

18. Ibid

19. Özen, E. & Ersoy, G., 2019, 'The impact of financial literacy on cognitive biases of individual investors', Contemporary Issues in Behavioral Finance 101, 77–95. <https://doi.org/10.1108/S1569-375920190000101007>

Mental accounting is a behavioral economics concept that states that humans place different values on money, which leads to irrational decision-making.

We'll observe a few methods to enhance and improve investment behavior:

- Providing confidence and facilitating choice<sup>20</sup> :  
Preferences can be significantly influenced by how we make an offer. It is essential to redesign the presentation of investment products to make them simpler to comprehend and contrast. Initiatives that can be developed in this area include reducing analysis paralysis by displaying limited options or by creating profiles that shorten search times. One effective strategy to boost enrollment was to restrict the options.
- Monitoring following the investment<sup>21</sup> :  
Following an investment purchase, prompt and cordial follow-up is essential to gaining loyal clients and repeat business. This can be accomplished, for instance, by creating monitoring systems that reduce risk aversion and boost confidence, like intelligent alarms or alerts, or by offering reports that are simple to read and visually represent a customer's financial history.

### Chapter 3: How Behavioral Economics Affects Banking?

Banking practices have been significantly impacted by behavioral finance since it has altered how financial institutions view and respond to consumer behavior. Traditional banking models, which are based on logical decision-making and market efficiency, have been challenged by the insights provided by behavioral finance, which recognizes that people frequently make decisions influenced by cognitive biases and emotions rather than pure logic. Banks are focusing more on understanding the psychological characteristics and preferences of their customers, which has led to more customized services and product offerings<sup>22</sup>.

To make more effective marketing campaigns that incorporate nudges that assist customers in making better financial decisions, banks, for example, use behavioral insights. One example of these strategies is to present options in a way that reduces the impact of biases like anchoring or loss aversion. Behavioral finance has influenced risk management procedures. In recognition of the potential for customers to overestimate their ability to manage financial risks or fail to adequately prepare for unforeseen circumstances, banks are introducing more thorough, personalized financial advice and risk assessment models<sup>23</sup>.

Additionally, as digital banking has expanded, behavioral finance has grown even more significant, with businesses employing data analytics to predict customer behavior and improve user experiences. Ultimately, behavioral finance integration improves overall financial decision-making and assists banks in developing more intimate, adaptable relationships with their customers<sup>24</sup>.

22. Tversky, A., & Kahneman, D. (1992). Advances in Prospect Theory: Cumulative Representation of Uncertainty. *Journal of Risk and Uncertainty*, 5(4), 297-323

23. Ranjan; *Asian J. Econ. Busin. Acc.*, vol. 25, no. 1, pp. 374-386, 2025; Article no.AJEBA.129655

24. Heath, C., & Tversky, A. (1991). Preference and Belief: Ambiguity and Competence in Choice under Uncertainty. *Journal of Risk and Uncertainty*, 4(1), 5-28

The primary objective of behavioral interventions in banking is to apply behavioral finance insights to improve decision-making for financial institutions and their clients. Behavioral interventions for bank employees and management may include teaching them to identify and address biases that affect lending and investment decisions. Better consumer outcomes and more objective decision-making may result from this. By encouraging more moral and effective banking procedures and better consumer decision-making, behavioral interventions in banking ultimately aim to enhance financial well-being<sup>25</sup>.

### The Impact of Behavioral Economics on Banking Consumer Choices

Behavioral economics has identified several cognitive biases that prevent people from making wise financial decisions, and here are some important examples of how banks can assist:

- **Getting Rid of “Present Bias” to Preserve the Future**

Due to their tendency to be biased toward their current situation and stage of life, people frequently find it difficult to save for the future because it doesn't feel real. Why put money aside for a future that seems so distant? Banks can assist with this by automating the saving process<sup>26</sup>.

Customers who struggle to save or are unsure of how to start saving can benefit greatly from Huntington Bank's automated savings program, which promotes their financial well-being<sup>27</sup>.

- **Effectively Address the “Anchoring” Issue with Pertinent, Impactful Data**

The “Anchoring” problem is another cognitive bias in financial decision-making. People often remember the first number they see or hear when they are doing financial research. This initial figure then serves as the “anchor” or benchmark for subsequent choices. Financial institutions can encourage people to save more by displaying the precise amount they can afford to save (based on their actual customer transaction data)<sup>28</sup>.

Based on the customer's transaction history and spending habits, “My State Bank” in Australia uses its autosavings program to show customers how much they can save. This is an excellent illustration of how to overcome “Anchoring” bias by providing clients with pertinent data derived from actual data.

- **Helping People Save Without Being Overwhelmed: The Zeigarnik Effect**

Another psychological idea that illustrates how people procrastinate when faced with open-ended tasks is the “Zeigarnik Effect.” People's long-term savings may suffer as a result; if they believe saving is too difficult, they may never begin. By providing notifications and progress indicators as users save toward their financial objectives, financial advisors (FIs) can reassure users and reinforce their saving behaviors in addition to automating the saving process<sup>29</sup>.

- **Nudge Theory:** Use Positive Reinforcement to Help People Nudges are gentle reminders and encouraging words that encourage people to make wise choices. Examples of these include alerts about low balances or recommendations for savings

---

25. Ritter, J. R. (2003). Behavioral Finance. *Pacific-Basin Finance Journal*, 11(4), 429-437

26. <https://www.pewtrusts.org/en/about/news-room/opinion/2018/09/04/automatic-enrollment-for-retirement-savings-an-increasingly-available-option-with-a-large-impact>

27. <https://www.americanbanker.com/news/huntington-launches-automated-savings-tool>

28. [https://personetics.com/wp-content/uploads/2022/04/Behavioral-Economics-and-banking-eBook.pdf?utm\\_campaign=Act%20eBook%202022&utm\\_medium=email&\\_hsenc=p2ANqtz-bK-zvzv38ztB04dAXAmvmwrW7HhwMg96RP\\_okS63dTuvYkq\\_2\\_M2Ee2T6uluV-LglZ2zvLJcaGwibjGqgerMcGzLuKA&\\_hsmi=223115242&utm\\_content=223115242&utm\\_source=hs\\_automation](https://personetics.com/wp-content/uploads/2022/04/Behavioral-Economics-and-banking-eBook.pdf?utm_campaign=Act%20eBook%202022&utm_medium=email&_hsenc=p2ANqtz-bK-zvzv38ztB04dAXAmvmwrW7HhwMg96RP_okS63dTuvYkq_2_M2Ee2T6uluV-LglZ2zvLJcaGwibjGqgerMcGzLuKA&_hsmi=223115242&utm_content=223115242&utm_source=hs_automation)

29. Ibid

targets. Customers can be reminded to act, reassured that they are on track, and continuously motivated to make progress by using nudges<sup>30</sup>.

Given the difficulties that individuals and organizations encounter when attempting to think rationally about money, it makes sense that banks should take behavioral economics into account when creating banking products. This is the reason<sup>31</sup>:

- **Getting Deeper Understanding:** By integrating behavioral economics, banks can better understand consumer behavior and the emotional factors that influence financial and budgetary decisions.
- **Accepting emotional needs:** Emotion plays a major role in influencing financial decisions and is the primary motivator behind many saving and buying decisions. Banks can support and enable customers to lead healthier financial lives by learning about their true motivations, not just their on-screen actions when banking online. Banks are in a good position because they can educate people about their unconscious and conscious prejudices when they are offering potential banking solutions. Before making financial decisions, few customers have the time or desire to consider their options thoroughly.
- **Better product design and innovation:** In today's so-called "eyeball economy," where numerous challenger banks and FinTechs are fighting for attention daily, everyone is fighting for their share of eyes and increased visibility. The foundation and transparency of digital banking solutions are made possible by behavioral economics principles, which also give an advantage to those who fully comprehend the idea.

### Personalized Financial Products

One of the most profound shifts in the banking sector has been the move towards personalized financial products. Traditional banking products, such as loans, mortgages, and savings accounts, were largely one-size-fits-all, assuming that all customers had similar preferences and needs. However, behavioral economics has shown that individual preferences are diverse, and tailoring financial products to customers' unique psychological profiles can significantly improve engagement and outcomes<sup>32</sup>.

### Impact of Gamification

In recent years, gamification—the use of game-like elements in non-game contexts—has been increasingly used to engage customers in their financial decisions. Banks have incorporated gamified features such as progress tracking, rewards, and challenges into their apps to encourage positive financial behaviors, such as saving, budgeting, and paying off debt.

Bank of America's "Keep the Change" program<sup>33</sup>. Is a prime example of gamification in banking. This program rounds up every purchase a customer makes to the nearest dollar, with the difference automatically transferred to their savings account. This small change not only makes saving more automatic, but it also feels like a game, with customers seeing their savings grow with each transaction. Similarly, Chime and Revolut<sup>34</sup>, mobile-first banks, incorporate

32. Karanam, Dinesh (2023). The Behavioral Economics: A Game Changer in Financial Services.

33. <https://www.bankofamerica.com/deposits/keep-the-change/>

34. <https://fintechmagazine.com/articles/comparing-revolut-chime-and-n26-neobank-success-stories>

gamified features to promote savings, offering users incentives, such as “spending streaks” and rewards for meeting savings goals.

### **Simplified Financial Services**

Financial services can often be complex and intimidating for consumers, especially when it comes to products like insurance or investment portfolios. Behavioral economics suggests that simplifying these products can improve customer engagement and decision-making. Consumers are more likely to opt for financial services that are easy to understand, transparent, and feel intuitive.

For example, robo-advisors like Wealthfront and Betterment<sup>35</sup> have emerged as simplified alternatives to traditional financial advisors. These platforms use algorithms to manage and diversify portfolios for customers, making it easier for individuals to invest without needing an in-depth understanding of the market. The simplicity and transparency of these services appeal to people who may otherwise be overwhelmed by the complexity of traditional investment options.

## **Chapter 4: Industry Real Examples**

### **Example 1: Barclays**

Barclays focuses on behavioral economics in the process of making investment decisions. For many years, Barclays’ Behavioral Finance division was the only one of its kind in the world. It was established in 2006.

Barclays has fundamentally questioned the conventional wisdom that investors seek the best risk-adjusted returns as a result of its analysis. This idea assumes that investors can ignore their very real emotions during the investing process and are only interested in long-term financial efficiency. Because making wise long-term investment decisions is always uncomfortable, investors tend to stray from sound investing practices. Barclay’s approach to behavioral finance acknowledges this human need for comfort rather than dismissing it. Investors will be able to weather the storm and reap the greatest rewards if there is a workable system that attends to the customer’s need for emotional comfort along the way<sup>36</sup>.

### **Example 2: BBVA**

BBVA is building its portfolios using behavioral economics. The BBVA Asset Management asset allocation team has redesigned its investment procedure during the last three years in an effort to increase the degree of objectivity in portfolio construction decision-making.

According to Jaime Martínez, Head of Asset Allocation at BBVA, behavioral finance, and economics—which examine how human decision-making is influenced by mental power—are the sources of inspiration for their guiding principles. To lessen its effects and profit from other people’s mistakes, Jaime believes that understanding, identifying, and isolating the human element is more important in the investment process than eliminating it<sup>37</sup>.

---

35. <https://www.nerdwallet.com/article/investing/betterment-vs-wealthfront>

36. <https://home.barclays/news/2017/03/how-behavioural-finance-is-helping-investment-managers-minimise-risk/>

37. <https://www.bbva.com/en/bbva-asset-management-applying-behavioral-economics-portfolio-construction/>

### **Example 3: PNC Bank<sup>38</sup>**

When it came to product innovation, PNC Bank considered behavioral economics and hired IDEO to come up with fresh strategies for drawing in millennials. They applied design thinking and conducted quantitative research on how people spend money and consider saving, along with ethnographic techniques like user diaries and in-depth interviews. Young people check their accounts a few times a day, according to the findings, so they thought about developing a digital “wallet” with tools to better track their spending.

After learning more about how people save money, PNC Bank also created the “Punch the Pig” feature, which is an icon of a pig that users can click to automatically set aside a small sum of money while also receiving a little emotional boost.

### **Example 4: EarnUp App<sup>39</sup>**

The EarnUp app’s name change was motivated by the fact that behavioral economics can also be applied to communications in the FinTech space. Results showed a 59% higher clickthrough rate after launching a Facebook ad campaign for the app using the word “earn” rather than “save.”

They found that opportunities to “earn” rather than “save” are far more likely to be considered by people. For many users, saving is a very abstract idea that requires long-term planning for the future. For many, saving also means losing something. Your current self is being sacrificed to pay for your future self.

### **Example 5: Lemonade<sup>40</sup>**

Lemonade, an insurance startup, uses behavioral science to distinguish its brand and onboard new customers. The most well-known instance of using behavioral insights was when Lemonade streamlined its claim approval procedure to allow for claim approval in three seconds rather than days.

Customers sign an honesty clause at the beginning of the process rather than at the end because Lemonade is all about being honest and transparent. Additionally, they publish open blog entries with information on bank account balances, consumer growth, and other topics.

### **Example 6: Bank of America<sup>41</sup>**

The BeFi team at Bank of America has been expanding steadily with a Head of Behavioral Finance, a Behavioral Finance Analyst, and many more who consult for financial advisors, Merrill Lynch Global Wealth Management, and other Bank of America brands. They support the BF drive to develop solutions for clients and businesses and to create synergies across all areas.

### **Example 7: Merrill Lynch<sup>42</sup>**

With three distinct work groups and a behavioral finance team of twenty-five people, Merrill Lynch is well aware that performance charts aren’t enough. They believe that they must genuinely comprehend their clients’ objectives and motivations to delve deeper and be of assistance to them. In the upcoming years, they intend to bring on several new team members to concentrate on their wealth management platform and online toolkit.

---

38. <https://www.scnsoft.com/finance/gamification-in-banking#:~:text=PNC%20Bank's%20Punch%20the%20pig%20game&text=The%20Wallet's%20Money%20Bar%20feature,feature%20called%20Punch%20the%20Pig.>

39. <https://earnup.com/>

40. <https://www.fastcompany.com/3068506/lemonade-is-using-behavioral-science-to-onboard-customers-and-keep-them-honest>

41. <https://www.bankofamerica.com/deposits/keep-the-change/>

42. [https://www.financialadvisoriq.com/c/1286283/144673/merrill\\_moves\\_upgrade\\_behavioral\\_finance\\_support](https://www.financialadvisoriq.com/c/1286283/144673/merrill_moves_upgrade_behavioral_finance_support)

### **Example 8: Behavioral Insights Team (BIT)**

The Behavioral Insights Team (BIT), often referred to as the “Nudge Unit,” was established by the UK government to apply behavioral economics to public policy, including financial decision-making. One of the team’s key initiatives was improving consumer engagement with pension plans. By applying simple behavioral interventions such as changing the default option to automatic enrollment, the UK increased the number of individuals saving for retirement.

Additionally, the BIT used reminders and nudges to encourage people to pay their taxes on time, resulting in a significant increase in tax compliance. These examples demonstrate how behavioral insights can be used to drive positive financial behavior and improve public outcomes<sup>43</sup>.

### **Example 9: Behavioral Economics in Microfinance**

Microfinance institutions (MFIs), which provide small loans to underserved populations, have also integrated behavioral economics into their lending models. Grameen Bank and other MFIs have used insights such as commitment devices to help borrowers repay loans. For example, some MFIs require borrowers to form peer groups, where each member holds others accountable for repaying their loans. This social pressure and the commitment to a group significantly increase repayment rates, illustrating how behavioral insights can foster positive financial behaviors in even the most vulnerable communities<sup>44</sup>.

## **Chapter 5: Ethical Considerations and Challenges**

### **Ethical Dilemmas in Nudging**

While nudging can have positive outcomes, it also raises significant ethical concerns. Critics argue that banks could potentially exploit customers’ biases to steer them toward decisions that may not be in their best interest. For example, nudging customers toward high-fee products, or making it difficult for them to opt out of certain financial services, could be seen as manipulative. Ethical guidelines and regulations are essential to ensure that nudging is used responsibly, with the consumer’s well-being in mind<sup>45</sup>.

### **Transparency and Consumer Protection<sup>46</sup>**

Transparency is a key ethical issue in the application of behavioral economics in banking. Financial institutions must ensure that their products and services, particularly those that use nudges, are clear and transparent to consumers. If consumers are not fully aware of the terms and conditions or the behavioral strategies being employed, they may make decisions that are not in their best interest.

Regulatory bodies, such as the Financial Conduct Authority (FCA) in the UK, are increasingly focused on ensuring that financial products are not only designed to be effective but also to protect consumers from exploitation. These bodies are actively reviewing how banks implement behavioral economics to ensure consumer rights are not compromised.

---

43. <https://www.thebehavioralscientist.com/glossary/behavioural-insights-team>

44. <https://www.sciencedirect.com/science/article/pii/S2405844024072475>

45. Loewenstein, G. & Chater, N., 2017, ‘Putting nudges in perspective’, *Behavioural Public Policy* 1(1), 26–53. <https://doi.org/10.1017/bpp.2016.7>

46. Wilkinson, T.M., 2013, ‘Nudging and manipulation’, *Political Studies* 61(2), 341–355. <https://doi.org/10.1111/j.1467-9248.2012.00974.x>

### **The Challenge of Consumer Trust and Data Privacy<sup>47</sup>**

As banks increasingly adopt behavioral economics to enhance their services, they face growing concerns related to consumer trust and data privacy. The use of personal data to tailor products and nudge behavior introduces the risk of breaches or misuse. For instance, the use of behavioral data to predict customer behavior can be seen as intrusive if customers are not fully informed about how their data is being used.

Consumers are increasingly concerned about how their data is being collected, stored, and utilized. The implementation of strong data protection measures, as seen in the European Union's General Data Protection Regulation (GDPR), aims to address these concerns, but many banks still struggle with balancing personalized services with consumer privacy.

Moving forward, transparency about data usage and robust privacy policies will be essential for building trust in behavioral interventions. Banks will need to communicate how they are using consumer data, ensuring that it benefits customers rather than merely driving profit for the institution.

### **Overcoming Behavioral Resistance to Change**

Despite the growing evidence supporting behavioral economics in improving financial decision-making, many consumers exhibit resistance to change. This resistance can take various forms: some individuals may feel uncomfortable with the idea of automated saving, others may be skeptical about digital banking or fintech platforms, and still others may distrust the use of algorithms in making financial decisions<sup>48</sup>.

To overcome this resistance, banks need to focus on building long-term relationships with consumers, ensuring that behavioral interventions are implemented in ways that are non-coercive and fully aligned with the customers' best interests. Consumer education is also key in overcoming resistance; by increasing financial literacy and helping individuals understand the behavioral strategies in place, banks can foster a greater sense of comfort with these new products and services.

### **The Role of Behavioral Economics in Regulating the Banking Sector**

As behavioral economics continues to play a larger role in the banking sector, regulators must ensure that interventions are both effective and ethical. The regulatory framework needs to adapt to the new reality of behavioral economics, which includes overseeing the use of nudges, ensuring transparency in product offerings, and preventing exploitative practices.

Regulators must also address the risks associated with increased reliance on algorithmic decision-making, which could lead to discriminatory outcomes if not carefully monitored. A key concern in this area is the potential for algorithms to perpetuate biases based on historical data, resulting in unfair treatment of certain consumer groups<sup>49</sup>.

To address these issues, behavioral regulators may consider creating specific guidelines for the use of behavioral insights in financial products, requiring clear disclosures and consent for

---

47. Jørgensen, P. (2014). Behavioral Economics and Financial Services. *Journal of Financial Services Marketing*, 19(3), 185-200.

48. Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does Gamification Work? A Literature Review of Empirical Studies on Gamification. In *Proceedings of the 47th Hawaii International Conference on System Sciences*, 3025–3034.

49. General Data Protection Regulation (GDPR). (2018). Regulation (EU) 2016/679 of the European Parliament and of the Council.

data usage, and establishing independent review boards to assess the ethical implications of behavioral interventions.

## Conclusion

### Summary of Key Findings

This paper has explored the impact of behavioral economics on the banking sector, highlighting how psychological insights are reshaping consumer behavior, financial products, and banking strategies. By incorporating concepts such as cognitive biases, heuristics, nudging, and mental accounting, banks have been able to develop products and services that better align with the way consumers think and behave. Behavioral economics has led to significant changes in how products are marketed, how loans and savings are structured, and how customers are engaged through personalized financial advice.

Some examples from both traditional financial institutions and fintech companies have demonstrated the effectiveness of behavioral strategies in fostering positive financial behaviors, such as saving and investing. Programs like the Save More Tomorrow initiative and innovations like gamified savings apps showcase the power of nudging consumers toward better financial decisions.

However, the application of behavioral economics in banking is not without its challenges. Issues such as data privacy, consumer trust, resistance to change, and ethical concerns about manipulative nudging must be addressed to ensure that these strategies are implemented responsibly. Furthermore, regulatory frameworks need to evolve to keep pace with the use of behavioral economics in financial products and services.

### Future Directions

Looking ahead, the integration of behavioral economics into banking is expected to continue expanding, particularly with the rise of digital and mobile banking platforms. Behavioral insights will increasingly inform the design of smart financial tools and personalized banking experiences that cater to individual customers' needs and preferences.

#### In the future, we can expect:

1. **Increased Use of Artificial Intelligence (AI) and Machine Learning:** Banks will likely expand their use of AI to analyze consumer behavior in real time, offering more targeted nudges and personalized financial advice. AI-driven tools will help consumers better understand their financial situations and make decisions that align with their long-term goals.
2. **Enhanced Consumer Protection:** As the use of behavioral economics expands, regulators will need to implement stronger safeguards to ensure that consumers are not taken advantage of. The role of behavioral regulators will become even more important in creating policies that balance innovation with consumer protection.
3. **Greater Financial Inclusion:** Behavioral economics could play a crucial role in advancing financial inclusion by offering solutions tailored to underbanked populations. By addressing cognitive biases such as present bias, banks can design products that encourage saving and investment among individuals who might otherwise lack the financial literacy or discipline to engage in traditional banking.
4. **Global Adoption of Behavioral Insights:** As more banks and financial institutions across the world adopt behavioral economics, the global financial landscape may experience widespread positive changes in how people save, borrow, and invest. This could help mitigate issues such as debt accumulation, lack of retirement savings, and poor financial literacy on a global scale.

## References

- Thaler, R. H., & Benartzi, S. (2004). Save More Tomorrow: Using Behavioral Economics to Increase Employee Saving. *Journal of Political Economy*, 112(1), S164-S187.
- Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47(2), 263-291.
- Sunstein, C. R. (2014). *The Ethics of Influence: Government in the Age of Behavioral Science*. Cambridge University Press.
- Cialdini, R. B. (2009). *Influence: The Psychology of Persuasion*. Harper Business.
- Jørgensen, P. (2014). Behavioral Economics and Financial Services. *Journal of Financial Services Marketing*, 19(3), 185-200.
- Choi, J. J., Laibson, D., Madrian, B. C., & Metrick, A. (2004). Plan Design and 401(k) Savings Outcomes. National Bureau of Economic Research Working Paper Series No. 10486.
- Gine, X., & Mansuri, G. (2011). Microfinance and Financial Literacy: Evidence from a Randomized Experiment in India. *Journal of Development Economics*, 103(2), 389-400.
- <https://thedecisionlab.com/thinkers/economics/daniel-kahneman>
- <https://www.sciencedirect.com/topics/psychology/prospect-theory#:~:text=In%20the%20late%201970s%2C%20Daniel,risk%20seeking%20or%20risk%20averse.>
- <https://blogs.lse.ac.uk/businessreview/2024/05/28/a-lookback-at-the-collaboration-that-paved-the-way-for-behavioural-economics/#:~:text=Psychologists%20Daniel%20Kahneman%20and%20Amos,to%20heuristics%2C%20biases%20and%20frailties.>
- Martín, M. and Valiña, M. (2023) Heuristics, Biases and the Psychology of Reasoning: State of the Art. *Psychology*, 14, 264-294. doi: 10.4236/psych.2023.142016.
- <https://www.nottingham.ac.uk/business/who-we-are/centres-and-institutes/gcbfi/documents/researchreports/paper92.pdf>
- <https://www.routledge.com/An-Analysis-of-Richard-H-Thaler-and-Cass-R-Sunsteins-Nudge-Improving-Decisions-About-Health-Wealth-and-Happiness/Egan/p/>
- Witynski, M. nd. 'Behavioral Economics, Explained' UChicago News. [Online] Available: <https://news.uchicago.edu/explainer/what-is-behavioral-economics>
- <https://www.nottingham.ac.uk/business/who-we-are/centres-and-institutes/gcbfi/documents/researchreports/paper92.pdf>
- Özen, E. & Ersoy, G., 2019, 'The impact of financial literacy on cognitive biases of individual investors', *Contemporary Issues in Behavioral Finance* 101, 77-95. <https://doi.org/10.1108/S1569-375920190000101007>
- Pompian, M.M., 2011, *Behavioral finance and wealth management: How to build optimal portfolios that account for investor biases*, John Wiley & Sons, Hoboken, NJ.
- Behavioral economics Applied to the financial sector, April 2021, by EY global Ernst & Young Global Ltd.
- <https://www.ey.com/content/dam/ey-unified-site/ey-com/en-gl/services/strategy/documents/ey-behavioral-economics-applied-to-financial-sector-4-2021.pdf>
- Tversky, A., & Kahneman, D. (1992). Advances in Prospect Theory: Cumulative Representation of Uncertainty. *Journal of Risk and Uncertainty*, 5(4), 297-323
- Ranjan; Asian J. Econ. Busin. Acc., vol. 25, no. 1, pp. 374-386, 2025; Article no.AJEBA.129655

- Heath, C., & Tversky, A. (1991). Preference and Belief: Ambiguity and Competence in Choice under Uncertainty. *Journal of Risk and Uncertainty*, 4(1), 5-28
- Ritter, J. R. (2003). Behavioral Finance. *Pacific-Basin Finance Journal*, 11(4), 429-437
- <https://www.pewtrusts.org/en/about/news-room/opinion/2018/09/04/automatic-enrollment-for-retirement-savings-an-increasingly-available-option-with-a-large-impact>
- <https://www.americanbanker.com/news/huntington-launches-automated-savings-tool>
- [https://personetics.com/wp-content/uploads/2022/04/Behavioral-Economics-and-banking-eBook.pdf?utm\\_campaign=Act%20eBook%202022&utm\\_medium=email&\\_hsenc=p2ANqtz--bK-zvvnv38ztB04dAXAmvmwrW7HhwMg96RP\\_okS63dTuvYkq\\_2\\_M2Ee2T6uluV-LglZ2zvLJcaGwibjGqgerMcGzLuKA&\\_hsmi=223115242&utm\\_content=223115242&utm\\_source=hs\\_automation](https://personetics.com/wp-content/uploads/2022/04/Behavioral-Economics-and-banking-eBook.pdf?utm_campaign=Act%20eBook%202022&utm_medium=email&_hsenc=p2ANqtz--bK-zvvnv38ztB04dAXAmvmwrW7HhwMg96RP_okS63dTuvYkq_2_M2Ee2T6uluV-LglZ2zvLJcaGwibjGqgerMcGzLuKA&_hsmi=223115242&utm_content=223115242&utm_source=hs_automation)
- Bruns, H., Kantorowicz-Reznichenko, E., Klement, K., Luistro Jonsson, M. & Rahali, B., 2018, 'Can nudges be transparent and yet effective?', *Journal of Economic Psychology* 65, 41-59. <https://doi.org/10.1016/j.joep.2018.02.002>
- <https://www2.deloitte.com/us/en/insights/deloitte-review/issue-16/behavioral-economics-predictive-analytics.html>
- Karanam, Dinesh (2023). The Behavioral Economics: A Game Changer in Financial Services.
- <https://www.bankofamerica.com/deposits/keep-the-change/>
- <https://fintechmagazine.com/articles/comparing-revolut-chime-and-n26-neobank-success-stories>
- <https://www.nerdwallet.com/article/investing/betterment-vs-wealthfront>
- <https://home.barclays/news/2017/03/how-behavioural-finance-is-helping-investment-managers-minimise-risk/>
- <https://www.bbva.com/en/bbva-asset-management-applying-behavioral-economics-portfolio-construction/>
- <https://www.scnsoft.com/finance/gamification-in-banking#:~:text=PNC%20Bank's%20Punch%20the%20pig%20game&text=The%20Wallet's%20Money%20Bar%20feature,feature%20called%20Punch%20the%20Pig>
- <https://earnup.com/>
- <https://www.fastcompany.com/3068506/lemonade-is-using-behavioral-science-to-onboard-customers-and-keep-them-honest>
- <https://www.bankofamerica.com/deposits/keep-the-change/>
- <https://www.sciencedirect.com/science/article/pii/S2405844024072475>
- Loewenstein, G. & Chater, N., 2017, 'Putting nudges in perspective', *Behavioural Public Policy* 1(1), 26-53. <https://doi.org/10.1017/bpp.2016.7>
- Wilkinson, T.M., 2013, 'Nudging and manipulation', *Political Studies* 61(2), 341-355. <https://doi.org/10.1111/j.1467-9248.2012.00974.x>
- Jørgensen, P. (2014). Behavioral Economics and Financial Services. *Journal of Financial Services Marketing*, 19(3), 185-200.
- Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does Gamification Work? A Literature Review of Empirical Studies on Gamification. In *Proceedings of the 47th Hawaii International Conference on System Sciences*, 3025-3034.
- General Data Protection Regulation (GDPR). (2018). Regulation (EU) 2016/679 of the European Parliament and of the Council



**Headquarters – Nasr City**

22 A, Dr. Anwar El Mofty St., Tiba 2000  
P.O.Box 8164 Nasr City, Cairo, Egypt  
Tel.: (+2) 02 24054472  
Fax: (+2) 02 24054471

**Working hours:** 9:00 am - 5:00 pm  
**[www.ebi.gov.eg](http://www.ebi.gov.eg)**



**Like us on**

[facebook.com/EgyptianBankingInstitute](https://facebook.com/EgyptianBankingInstitute)



**Follow us on**

[twitter.com/EBItweets](https://twitter.com/EBItweets)



**Join us on**

[linkedin.com/company/egyptian-banking-institute](https://linkedin.com/company/egyptian-banking-institute)



**Watch us on**

YouTube Channel: Egyptian Banking Institute (EBI)