



**Effects of Gamification Mechanisms on the Behaviour of Bank Customers Using  
Credit Cards**

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### **Abstract**

The technique of integrating game design into non-game businesses has received much attention in recent years. Examples include banks that offer points, rewards/benefits, and discounts, usually intending to increase credit card usage and increase customer engagement, satisfaction, and intentions. The purpose of this study is to investigate the effects of the gamification mechanism on the behaviour of bank customers using credit cards.

A convenience sample approach was used to distribute an online questionnaire to 88 participants in New Zealand to test the research hypotheses that gamification influences engagement, satisfaction, and intention on customer purchasing behaviours when using credit cards. An independent sample t-test was used to analyse the data. According to the findings, a higher reward points value in gamification significantly influenced engagement and satisfaction in bank customers to use credit cards while making purchases. However, the findings did not support that gamification affects customer intention. The findings contribute to the field of gamification research and encourages banking sectors to consider how they may improve the customer purchase experience by refining the gamification elements into products and services. Further research could be undertaken to determine how much banks and other financial institutions profit by implementing gamification into their products and services.

**Keywords:** Gamification; Bank industry; Credit card; Reward points; Engagement; Satisfaction; Intention

## **Dedication**

This thesis is dedicated to my parents and my sister for their endless love, support, and encouragement during my educational journey. I am hoping that this accomplishment will fulfil the dream they had for me.

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### List of Acronyms

ANZ	Australia and New Zealand Banking Group
CIMB	Commerce International Merchant Bankers
$H_0$	Null Hypothesis
$H_1$	Alternative Hypothesis
IRF	Incentive Research Foundation
OP	Otago Polytechnic
OECD	Organisation for Economic Co-operation and Development
OPAIC	Otago Polytechnic Auckland International Campus
$r$	Correlation coefficient
RBNZ	Reserve Bank of New Zealand
RMS	Reward Management System
SPSS	Statistical Package for the Social Sciences
TAM	Technology Acceptance Model
UAE	United Arab Emirates
UK	United Kingdom
USA	United States of America

# **Effects of Gamification Mechanisms on the Behaviour of Bank Customers Using Credit Cards**

## **Chapter 1**

### **Introduction**

The use of gamification strategies in the banking sector has grown in recent years as it has been shown to promote customer motivation to use various banking services. It does so by rewarding positive behaviour, most commonly by incorporating game design elements into banking activities (Hamari and Koivisto, 2015). Therefore, there is a greater need to understand the issue of how gamification affects customer engagement, satisfaction, and intention, particularly when it comes to credit card usage (Chauhan et al., 2021). This research aims to evaluate how the use of gamification in credit card usage affects the engagement, satisfaction, and intention of bank customers. This section introduces the research by firstly discussing the background and context, followed by the research problem, significance, the research aims, objectives, and questions, and the research structure.

#### **1.1. Background of the Research**

According to Yosry (2021), gamification means applying gameplay principles and game design elements in a non-game environment. The same author suggests that game elements can be used to engage more customers and boost productivity. According to Christians (2018), the term gamification was used in 2002 by Nick Pelling, a British video game developer; incorporating a game-like interface design to make electronic transactions both fun and enjoyable on commercial electronic devices such as credit cards, mobile phone payments, etc. Since then, research and development efforts to define gamification have grown substantially (Cheng, 2020; Erickson et al.,

2020). However, a more in-depth review of the literature revealed that even before Pelling's work, airline loyalty programmes, such as frequent flyer programmes, allowed passengers to collect miles (i.e., points) that can be exchanged for money, and advertising strategies already incorporated some gamification elements (Zuo et al., 2018).

Heide and Zelinsky (2021) explain the inspiration for banks to incorporate gamification was based on the idea that video games are designed for entertainment and fun and can demonstrably motivate users to engage with unprecedented intensity and duration. As a result, adding game elements should be able to make other non-game products and services more enjoyable and engaging as well (Deterding et al., 2011). This has been achieved through the use of credit cards, a non-game product of the bank (Lim et al., 2014). Any credit or debit card that offers a rewards or loyalty programme to its cardholders is essentially using gamification to encourage purchase (Autry, 2021; Kekes-Szabo, 2021). The accumulation of reward points (coins) towards a purpose (exchange of goods and services) is the most basic of game elements, and they serve as the foundation for credit card gamification (Shelper et al., 2019).

Gamification primarily focuses on three main game elements, points, badges, and leader boards, tackling the sophistication of game design while emphasising simplicity and convenience, as confirmed by most commercial gamified applications (Chou, 2021) and academic researchers (Merhabi et al., 2021). The creators have a shared minimal language due to the widespread acceptance of these three components (Ji and Choi, 2021). The ease and speed with which these elements can be implemented is the single biggest gamification strength, allowing it to be widely adopted by services and systems outside the gaming industry (Walter, 2021). Customers can quickly understand the actions required of them by recognising common features in various

products and services, minimising the learning curve, and endorsing a quick user engagement (AlMarshedi et al., 2017).

Gamification seeks to take advantage of the most engaging aspects of games to increase users' motivation and engagement, thereby their performance and productivity (McIntyre, 2018). The publicity in the banking industry sparked widespread optimism: gamification platforms frequently produce incredible results, such as increased credit card payments in a variety of areas, typically by adding financial points to existing products and services (Llanos-Small, 2019).

According to Blohm and Leimeister (2015), who describes gamification in banking, as taking the game element called Progressive Rewards System (points, rewards/benefits, and discounts) and integrating them into credit cards. The Progressive Rewards System is sometimes known as Rewards Management System (RMS) (Emuron, 2020). A bank's RMS comprises of an application that is associated with financial rewards (Daci and Lani, 2020; Nemes, 2022). Kim and Ahn (2017) shared the observation that the latter aspects of financial rewards contribute to the psychological satisfaction of customers. This is because a reward strategy in gamification brings about the most efficient way to tap into the customer's natural compulsion, influencing customers to make credit card purchases while accumulating reward points. Persuasion is summarised by Rodrigues et al. (2019) as an influence on a person that may lead to a behaviour change; intervene at times of decision-making, offering rewards for desired behaviours and motivations.

Today, customers use a bank-issued card to shop, and they earn points when they purchase at retailers with whom the bank has a partnership (Bernazzani, 2021). Customers can later exchange their points for gift cards (Bernazzani, 2021). Overlapping these benefits, gamification's ability to understand customers' behavioural

patterns and psychology opens up the possibilities of new opportunities for banks (Kibble and Doyle, 2020). As a result, gamification increases customer engagement and behavioural change for banks, while it makes the credit card purchase process more fun and playful for customers (Stefanel and Goyal, 2018).

Successful gamification examples have also been presented in academic studies. According to Jang et al., (2018), incorporating extra points, levels, badges, leaderboards, and challenges into an app can boost customer engagement, online involvement, and proactive behaviour. Hartmann and Gommer (2021) state, game elements have discernible effects in increasing participation and motivation: combining a game mechanic with additional game elements can result in higher motivational effects. Gallegon-Duran et al., (2019) suggest using gamification to make measurable tasks required by interactive systems to ensure the best possible input and output pattern more engaging and enjoyable. Hinton's (2018) research into customer service show that it is possible to offer the joyful aspects of games, such as enjoyability and fun, to serious tasks without significantly modifying the characteristics of the tasks. According to findings by Aguiar and Rodriguez (2021), it is possible to introduce the pleasurable experiences of games, such as enjoyability and fun, to serious activities without drastically altering the nature of the task. Lazzaro (2004) demonstrated how removing a rewards-based incentive programme from a business social network decreases user activity, reducing the amount of participation and overall contribution.

Welbers et al., (2019) demonstrated in a review of gamification literature that this design technique improves customer performance, participation, motivation, and engagement, as highlighted by most of the paper revised in this research. According to Sethu and Nathan-Roberts (2021) the goal of gamification in the bank is to improve customer experience; while encouraging customers to use their credit cards to earn

reward points (Walsh, 2021), influencing customers to increase spending through using their credit cards, consequently achieving the bank's business goal (profitable growth). There is little empirical evidence to back up the effects of gamification, especially in the banking literature. This research will contribute to understanding this research gap by unveiling the game element that elicits purchasing behaviours of bank customers when using credit cards and will also evaluate which outcomes (engagement, satisfaction, and intention) are most influenced by gamification among bank customers. This research investigates whether there is a direct correlation between gamification and customer engagement, satisfaction, and intention in the banking business.

## **1.2. Statement of the Problem**

The majority of gamification studies (Blohm and Leimeister, 2015; Rodrigues et al., 2016) have emphasised the benefits of gamification to customers. With banks facing increasing pressure from competition to convey which credit card is better for customers (Denecker et al., 2020), incorporating gamification tactics into banking products and services is rapidly increasing (Salloux, 2022). The biggest challenge is trying to convince customers that their credit card is better than those of competitors (Denecker et al., 2020), this is when banks implement gamification into credit cards to attract more customers (Shah, 2020). Additionally, gamification offers distinct benefits to banks, such as the collection of customer data, which can be used to promote new products and services while also lowering customer service costs (Weiner, 2021). Customers share some personal data when interacting with the gamified application (Kim and Werbach, 2016; Trang and Weiger, 2019). Gamification enables banks to learn about their customers' spending habits by analysing acquired data, then tailoring their offerings to meet their specific needs (Shnaps, 2020), for example offering reward

points programme. The research focused and specifies gamification elements known as reward points which are integrated into credit cards and investigated whether these reward points affect customer purchasing behaviour when using credit cards. The existing literature does not have a clear application of game elements and mechanisms used in gamification that is advantageous for banks. Despite the growing number of research papers on gamification in the banking sector, there is a gap in the research on credit card usage that focused on specific gamification elements.

### **1.3. Significance of the Research**

The research aims to provide important information regarding the effects of gamification, and the findings will also benefit credit card users, considering that gamification plays an important role in changing behaviour (Hammady and Arnab, 2022). Banks will have a better understanding of credit card users' perceptions, allowing them to determine which areas to focus on and whether integrating gamification elements makes credit cards more desirable (Aldrich, 2018; Little, 2021). Banks can work on improving customer satisfaction and find ways to increase the level of satisfaction of the credit card that the customer holds, which ultimately will be beneficial for the customer.

The importance of this research is for the banks. The banking industry is highly competitive industry and seeks to differentiate itself from its competitors through constant innovation (Andrade, 2019). Gamification is a relatively new innovation that banks are adopting and integrating with their products and services (Lai and Liew, 2021). As a result, from the findings of this research, banks will understand whether gamification is affecting bank customers positively or negatively and they can refine

gamification elements into existing products and services to strengthen the relationship with their customer.

This research will be an instrument to guide and navigate the researcher in discovering credible and reliable data on credit card usage by bank customers and provide baseline information for future research on the issue of gamification, contributing to the literature.

#### **1.4. Objectives of the Research**

This research aims to explore and understand the effects of the gamification mechanism on the behaviour of bank customers who use credit cards in New Zealand. The purpose of this research is to explain credit card users' perceptions and behaviours in relation to gamification elements. Thus, it is the foremost goal of this research to explore not only how gamification is used in the New Zealand banking industry but also how it interlinks with credit cards, such as the offering of reward points, which is considered as a key contributor to the transactional nature of the purchasing process (Yadav, 2013).

The objectives of this research are as follows:

- To assess which gamification elements are desired among credit card users so that banks may incorporate them into existing products and services.
- To investigate and compare the degree to which engagement, satisfaction and intention are affected by gamification in credit card usage.
- To determine whether gamification influences customer credit card purchase behaviour through reward points.

### 1.5. Research Questions

This research aims to understand the effects of the gamification mechanisms on the behaviour of bank customers who use credit cards. The following questions were used as guidelines to fulfil research aim.

- Which gamification elements are most desired among credit card users in the banking context?
- Is there a significant relationship between gamification and customer engagement, satisfaction, and intention?
- Does the use of reward points in gamification influence purchasing behaviour among credit card users?

### 1.6. Research Hypotheses

This research seeks to satisfy the literature gap by identifying the effects of gamification mechanisms in the banking industry among credit card users. Specifically, this research will analyse whether reward points interlinked with credit cards determine customer engagement, satisfaction, and intention. Credit card gamification is the independent variable in this research, whereas engagement, satisfaction, and intention are the dependent variables. The hypotheses were developed in line with this research's conceptual model and are presented in the literature review section (Chapter 2).

To meet the objectives of this research, the following hypotheses have been formulated:

**Hypothesis 0<sub>1</sub> (H0<sub>1</sub>):** Gamification does not affect customer engagement in banking industry.

**Hypothesis 1 (H1):** Gamification affects customer engagement in banking industry.

**Hypothesis 0<sub>2</sub> (H0<sub>2</sub>):** Gamification does not affect customer satisfaction in the banking industry.

**Hypothesis 2 (H2):** Gamification affects customer satisfaction in the banking industry.

**Hypothesis 0<sub>3</sub> (H0<sub>3</sub>):** Gamification does not affect customer intention in the banking industry.

**Hypothesis 3 (H3):** Gamification affects customer intention in the banking industry.

### 1.7. Research Structure

The following section outlines the five chapters of this research, summarising each briefly below:

Chapter 1. – *Introduction* presents the background, problem statement, the significance of this research and briefly discusses the gaps in the literature related to gamification in the banking industry. The context of the research is defined, and the exploratory objectives are presented. Lastly, it outlines the organisation of this research as an overview before proceeding to the literature review chapter.

Chapter 2. – *Literature Review* provides an analysis of the literature on gamification that served as a basis for formulating the underlying hypothesis and the possible solutions. The objective was to determine the main findings in the field of investigation. This begins with a review of scholars on the concept of gamification, and a brief explanation of the adoption of gamification in different areas, followed by the outcomes of gamification in the banking industry. Finally, the details of the conceptual model of this study will be highlighted followed by a development of hypotheses.

Chapter 3. – *Research Methodology* presents the research design and why the selected methodology was chosen to address the objectives. Subsequently, the criteria for choosing the sampling techniques adopted are explained. The process for choosing the participants is outlined, sample size, the form of contact and approach, and the reasons for these choices. It also outlines the detail of the scenarios developed for the survey, questionnaire used, and the online platform used for the distribution of the questionnaires, and concludes by highlighting the form of data analysis chosen and the ethical issues.

Chapter 4. – *Data analysis* presents the analysis and interpretation using the methodologies chosen, and concludes with a summary of the research findings and links to this research objectives.

Chapter 5. – *Discussion, Recommendation, and Conclusion* builds upon the findings presented in Chapter 4, referring to the research question and hypotheses and the identified limitations. A comparative summary of the research findings and findings in the existing literature will be discussed, including areas for future research to gain a better understanding of gamification in the banking industry. Finally presenting the importance of the research findings, the conclusion generated from the research, and the recommendations will be highlighted.

## Chapter 2

### Literature Review

#### 2.1. Introduction

The literature review commences with a brief history of gamification before presenting how gamification is being used in various industries. Gamification will then be defined more precisely citing previous research. The current state of gamification in the banking business will be presented, followed by a review of relationship between gamification and motivation; and the two key motivational factors of gamification in banking: fun and rewards, reporting the findings in several studies, confronting similarities and dissimilarities among them. This literature review will cover the three outcomes of gamification in banking: engagement, satisfaction, and intention. Lastly, the research's conceptual model from which three hypotheses are formulated for this research will be presented.

#### 2.2. Gamification

Before formally defining the term gamification, it is important to explain the nature of the word 'game'. Board games, sports games, video games and mobile games are all examples of gaming (Balakrishnan and Griffiths, 2019). These games signify a system in which players participate in imaginative challenges interpreted by rules, user interaction, and feedback, resulting in a comparative outcome and frequently generating an emotional response (Pires et al., 2021). According to Khalid and Suriani (2017), a game is a formalised rule-based system with variable and measurable outcomes, with different values assigned to each outcome where the participant works hard to achieve the desired results. Even though the activity's consequences are optional

and negotiable, the participant develops an emotional attachment to the outcomes like engagement, satisfaction and intention (Khalid and Suriani, 2017).

The term gamification was first introduced in the early 2000s, but it did not gain widespread attention until 2010 when it was popularised by numerous authors (Groh, 2012). Ever since gamification has been used in different industries like hotel and tourism (Xu et al., 2017), healthcare (Hopia and Katja, 2016), learning and education (Sailer and Hommer, 2020), e-commerce (Behl et al., 2020; Meder et al., 2018), banking (Rodrigues et al., 2016) and even in politics (Mahnic and Praksa, 2014).

Table 1 presents gamification definitions from six research studies conducted over the last ten years, which provide insight into how different authors define it. Gamification is defined by Hopia and Katja, (2016) as the use of game elements and game design techniques in non-game contexts, whereas Sailer and Hommer, (2020) incorporate the goal of motivating customers and driving their behaviour. Xu et al., (2017) conceptualises gamification as the process of improving goods and services with an interactional gameful experience to assist customers in creating value. Offering a game-like experience is built to support and motivate customers towards specific desired behaviours, such as satisfaction, and intent to use products and services (Meder et al., 2018). Similarly, Rodrigues et al., (2016) described gamification as the process of combining game mechanics with different types of technology to increase engagement.

**Table 1***Previous Research on Gamification Adoption in Various Industries*

<b>Author</b>	<b>Context and Country</b>	<b>Definition Used</b>	<b>Examples and use of Gamification</b>	<b>Purpose of Research</b>	<b>Findings and total number of participants</b>
Mahnic and Praksa (2014)	<b><u>Politics = United States of America (USA)</u></b> Gamification is characterised by adding game mechanics (points, badges, virtual currencies, levels, and progress	“Gamification as using elements of game design in non-game contexts.” (Mahnic and Praksa, 2014, p. 144)	Political campaigns have started using gamification to reach out to supporters of different ages. For example, during Barack Obama's 2012 presidential campaign, his campaign website held a competition in which supporters could play online games for reward (dinner with the president) to raise a donation.	An attempt to examine the importance of gamification to increase participation in the field of politics by the incorporation of rewards.	Gamification as “a process of promoting ideology with affordances for gameful experiences to support candidates’ overall value creation.” (Mahnic and Praksa, 2014, p. 149)  The number of participants is not specified, but was inspired by a gamification experiment that took place during a political campaign.

	bars) to webpages and applications to improve the user experience.				
Hopia and Katja, (2016)	<b>Healthcare = Finland</b> Elements such as absorption, immersion, recognition, advancement from one level to the next, and competing with others.	“The term gamification does not only mean gaming, but also the application of game-playing elements in motivation people.” (Hopia and Katja, 2016, para. 4)	<b>Nike+</b> allow members to track activities, compare results, set goals, enhance performance, receive training tips and tricks after reaching a milestone. Users can stay motivated by participating in games, challenges, and virtual competitions with their friends.  <b>EveryMove</b> is an online health programme that allows members to earn	To explore the perceptions and experiences that health service users and healthcare professionals regarding the use of gamification.	“Gamification could bring ambition and regularity to daily routines by offering a meaningful activity, and in turn, increase social interactions and offer new networking.” (Hopia and Katja, 2016, para. 13)  42 participants

			rewards such as discounts on health insurance by achieving health goals.		
Rodrigues et al., (2016)	<b><u>Banking = Portugal and Australia</u></b> Integrating game features in a bank application to drive customer's participation and engagement and making banking activities	“Gamification is the consolidation of customer-centered game design elements and characteristics of non-game settings.” (Rodrigues et al., 2016, p. 392)	<b>Investorville</b> is an app introduced by the Commonwealth Bank of Australia. Customers use this app to simulate buying and owning a house. They can experiment with applying for various types of mortgages and learn how to pay property taxes. Customers can examine the consequences of their financial decisions and analyse potential risks while playing this app.	Conducted to understand the factors that affect the adoption of gamification in the banking industry.	The bank should pay special attention to all variables in the financial environment, which may act as the enabler to enhance bank customers to use gamified products and services. Therefore, bank intention to incorporate gamification is to encourage financial literacy, enjoyment, ease-of-use, usefulness, and intention to use.  183 participants

	more game-like.				
Xu, et al., (2017)	<p><b><u>Tourism = China and United Kingdom (UK)</u></b></p> <p>Gamification is about motivating people to act. It generates hedonic pleasure, suspense, and game-fullness.</p>	<p>“Gamification as contextualizing game design outside its original domain.” (Xu, et al., 2017, p. 2)</p>	<p>Designing a treasure hunt in a tourism destination, helping visitors to explore various areas and collect points, photos, memories, and experiences but does not have winners or losers.</p>	<p>Conducted to explore the effects of gamification on the hospitality industry by implementing a game mechanic called points.</p>	<p>Results show that gamification enhanced tourist on-site experiences as well as to be used as an innovative marketing tool (brand awareness) by sharing customer experiences. It also shows gamification being used for training service providers increasing motivation.</p> <p>143 participants</p>
	<p><b><u>Hotel training</u></b></p>		<p>An app where employees can interact as a manager of a virtual restaurant in a</p>		

			<p>hotel. Users can create their restaurant, where they can buy food, hire employees, and serve guests. Points will be given when users satisfy the customers' needs and receive rewards if they make a profit. This game aims to enable an employee to understand the operation of hotels.</p>		
<p>Meder et al., (2018); Behl et al., (2020)</p>	<p><b><u>E-commerce = India and United Arab Emirates (UAE)</u></b> The aspect of increasing customer</p>	<p>“Gamification is the art of applying game thinking and game mechanics in the non-game contexts to influence behaviour.”</p>	<p>One form of gamification in e-commerce is 'spin the wheel' contests, in which online shopping uses a spinner app to have their customers spin the wheel to receive discounts. The spinner invites its customers to participate in the game, incentivising</p>	<p>Analysed the relationships among website features, user attitudes, and behavioural intention in an e-commerce gamification context.</p>	<p>Users' perception of value and attitude can be improved more effectively with gamification, acquire a competitive advantage, and further evoke desired behavioural intentions.</p> <p>There was no indication of the number of participants.</p>

	participation in online shopping and building loyalty.	(Behl et al., 2020, p. 2)	them (10% off or save 15% for the first purchase, etc.) to buy their products.		
Sailer and Hommer (2020)	<p><b><u>Learning and Education - Germany</u></b></p> <p>A system in which players engage in a simulated conflict that is defined by rules and results and a measurable outcome.</p>	<p>“The use of game design elements in non-game contexts.”</p> <p>(Sailer and Hommer, 2020, para. 2)</p>	<p>Instructional contexts.</p> <p>Effective learning mechanisms triggered by game design elements.</p> <p>Influence learning outcomes in a positive way.</p>	<p>Mainly to investigate the effects of gamification on cognitive, motivational, and behavioural learning outcomes.</p>	<p>Indicate that small positive effects of gamification on cognitive, motivational, and behavioural learning outcomes when applied in competitive-collaborative studies and concludes gamification benefits learning.</p> <p>No participants.</p>

Gamification has been defined in a variety of ways in recent years. For example, Yamani (2021) defines gamification as "the use of game-design mechanisms in non-game situations, primarily on user-oriented websites and mobile applications, to stimulate some behaviour and endorse application adoption (p. 14)." In comparison, Alsubhi et al., (2020) define gamification as "the process of improving service by providing affordances for gameful experiences to sustain customers' overall value creation (p. 7)". This sets it apart from digital games and interactive play designs (Lyons, 2020). Hence, any application, context, process, or task can potentially be gamified (Morschheuser et al., 2017).

The definitions of gamification by Xu et al., 2017; Behl et al., 2020; Meder et al., 2018; and Rodrigues et al., 2016 focused on game elements and mechanisms such as points, rewards, and badges. Whereas Hopia and Katja, 2016, Sailer and Hommer 2020, and Mahnic and Praksa, 2014 definitions focused more on the individual's experience rather than the gamification process itself, such as story/theme, achievements, and challenges where participants engaged with something that evokes game-like experiences.

According to Tobon et al., (2019), "gamification is the process of incorporating customer-focused game design elements into non-game conditions and circumstances, where the interaction between game mechanisms and personal needs and preferences results in a fun and enjoyable experience (p. 3)".

In comparison to other definitions, Tobon et al., (2019) take it a step further by arguing that "there are two types of gamification: reward-based and meaningful gamification. Reward-based gamification is a system that uses achievements, levels, and points to behaviour in a real-world context (p. 11)". This type of gamification has a short-term effect on customer behaviour; when the rewards stop, so does the behaviour. In contrast, meaningful gamification is related to independent learning, in which customers connect the

experience to previously held beliefs, allowing for the transformation of those beliefs and long-term change (Nicholson, 2015).

The literature reports the integration of points, rewards, fun, meaningfulness, and rules as necessary components for increasing the effectiveness of gamification implementation in a non-game context (Mauroner, 2019). However, Warmelink et al., (2021) claims that there is no universally accepted list of gamification elements and mechanisms. Points, leader-boards, levels, badges, and reward systems were the most common gamification elements (Garett and Young, 2019). Sillaots et al. (2018) conducted a literature review of empirical studies on gamification and came up with a list of 103 different game elements; and according to the results of the analysis, the central game element the reward (Albertazzi et al., 2019).

### **2.3. Gamification in Banking**

Gamification has been a game-changer in the banking industry that many financial analysts expect to grow even more popular in the near future. Kolmar's (2021), current data showed that in 2022, companies that have gamification integrated into their products and services are 22% more profitable, have 10% higher customer satisfaction rates, and attract 21% more customers than in previous years. According to Research and Market (2021), the world market for game-based products and services is predicted to rise at a combined annual growth rate of 12.9% between now and 2025. According to Gupta (2021), by 2025, 70% to 80% of companies globally will have at least one gamified application. And according to Yahoo Finance (2021), the gamification market will be worth \$30.7 billion by 2025.

More banking options are required by customers as technology advances and evolves (Moneythor, 2021). Furthermore, customers do not find banking activities enjoyable or appealing. Most customers regard banking as an obligation, and they prefer to perform their

financial operations in a branch with face-to-face service. As a result, banks are finding innovative ways to keep customers interested and preventing them from shifting away to new competitors that are providing the same services with more engaging offerings that interact with customers more in their financial wellbeing (Moneythor, 2021). According to a survey of bank customers conducted by Charm et al., (2020), 75% of customers have experimented with different banks since COVID-19 started, and the results show that banking activities are the same from one bank to another. As Oleksiuk (2021) suggests banks that are at the frontline of gamification are those that meticulously and consistently apply game design elements and mechanisms. This is because the size and assets of a bank are not the most important factors in attracting and retaining customers. It's usually about fun and rewards, which are two things that customers get from playing (Bellens, 2021).

Making banking activity more engaging is difficult because many customers see personal financial operations as an overwhelming and routine task (Barquin and HV, 2016). Gamification of banking experiences is an intriguing development in response to that challenge; it enables customers to engage with their banks more effectively and transforms a chore or normally stressful banking tasks into an entertaining and rewarding interaction (OECD, 2020). Banking is considered a serious or tiring activity by many customers (Guindos, 2019). However, gamification is an innovative way to retain customers interested and involved in the experience (Yosry, 2021). Gamification of banking activities contributes to improving customer engagement while also providing relevant financial advice and assistance, as well as marketing content in entertaining and engaging way (OECD, 2020). Gamification does not always imply turning all banking tasks into a game. Instead, banks use some gameplay principles, design elements, and techniques to deliver timely insights and personalised information in a fun and rewarding way (Kapp, 2021). According to the 2019 Global Financial Services consumer study, banks also employ game mechanics to provide

personalised experiences and advise customers about their products and services. There are a large number of gamification elements to choose from, but points, leader-boards, levels, badges, and rewards are among the most popular in the banking sector (Garett and Young, 2019). These game elements are commonly used in banking products and services to motivate customers, increase the retention of the banking service, and encourage customers to develop good financial habits (Neuropsych, 2021).

Today, popular banking apps like Standard Chartered Bank's Twist and Win, Commerce International Merchant Banker's (CIMB) OctoChallenge, and Commonwealth Bank of Australia's Investorville use game mechanics to boost customer performance and participation in digital banking (Moneythor, 2021; Pay Space Magazine, 2020). Because of the widespread use of these apps, customers are now familiar with financial literacy and investment tracking (Ross, 2021). As a result, there are an increasing number of systems and services that use game elements to motivate and engage customers in many different industries, including health tracking (Nike+), forums (StackOverflow), and crowdsourcing platform (FoldIt) (Park and Kim, 2019; Mannermaa 2020 and Wasik, 2018). The increasing number of gamification-related articles in mainstream media is an example of this trend (i.e., The Washington Post (2021), New Zealand Herald (2021), Otago Daily Times (2019)). This optimistic outlook may indicate widespread acceptance of future apps that can fully utilise the versatility of gamification.

Gamification is used by banks to support loyalty and rewards programmes, as well as to raise awareness of customer interactions (Wanick and Bui, 2019). It not only gives customers a multi-touchpoint experience, but also allows banks to analyse various types of customer behaviour and interaction patterns, allowing them to gain a better understanding of their customer's needs (Kanazawa, 2020). According to Riethmann (2021), a customer's behaviour is determined by their needs and wants, and it can be more than one at a time, as

customers in banking are complex, multi-faceted, and sophisticated individuals. This is supported by Bayuk and Altobello's (2021) study on bank employees, who found that gamification can have negative consequences such as demotivation or distraction. In this retrospective study of banking gamification, employees in a gamified verses non-gamified assignment with unnamed rewards and badges showed decreased motivation, satisfaction, and empowerment over time (Bayuk and Altobello). The employee's intrinsic motivation mediated the relationship between the type of task and the end outcome (Bayuk and Altobello, 2021). Similarly, Basit et al., (2021) discovered that the effect of gamified systems in the workplace on performance was mediated by employees' intrinsic motivation. According to Johnston et al., (2015) and Dahlstrom (2017) on reviews of gamification literature, the majority of studies reported positive gamification experiences (such as engagement, fun, and satisfaction). However, they also stated that some of the same aspects were disliked, implying that not all aspects of gamification are viewed in the same way by customers. As a result, recognising what motivates which customers is critical, as matching the right types of motivators to the right types of bank customers is important for gamification success in the banking industry (Sereno, 2021).

Gamification also benefits a wide range of banking tasks (Stefanel and Goyal, 2018). For instance, money management content is being gamified to make it easier for customers to comprehend educational information to guide them in their financial planning journey. It assists customers in better understanding and tracking their expenses, as well as providing a more user-friendly features for financial operations apps, advice, and feedback (Stefanel and Goyal, 2018). According to Canio et al., (2021), gamification plays an exciting role in promoting meaningful customer behaviour in mobile banking, such as making complex financial transactions easier and enjoyable, increasing customer engagement, and commitment to new products and services, and creating customer loyalty. Integration of

gamification has given value to the bank services by transforming users' motivations and intentions through perceived enjoyment, fun, instant feedback, clear goals, social comparison, etc. (Wong et al., 2021). This is because customers interact with game-like technologies in a different manner and for various reasons. As a result, the concept developed by gamifying motivational contexts is highly variable, says Canio et al. (2021).

Several other authors have also emphasised the adoption of gamification in the banking industry. For example, Marache-Francisco and Brangier (2013) explain combining a mobile app with game themes, bright colour schemes, and animated emoji characters like pirate ships and treasure chests may sound like they belong in an online game, but they are now part of the everyday banking experience. Considering the fact that games play a vital role in our day-to-day life, the approach to using game elements in banks' mobile apps has been gaining popularity (Llewellyn, 2019). Mulcahy et al., (2018) believe that while mobile banking makes it easier for customers to access financial services, adding gamification to these banking apps makes the process more enjoyable and engaging, conclusively enhancing motivation to use more banking services. Joy and Justin (2019) explain the stimulation of various visual and audio senses in the mobile app creates a play-like experience for users. In addition, the usage of gamified apps, which promote customer involvement, encourage mobile payments that ultimately build trust with the gamified design mobile app (Vujevic, 2022). Users become dependent to their devices as a result of their continued use of an app, which promotes engaged participation motivated behaviour (Villalobos-Zuniga and Cherubini, 2020). Gamification has increased the value of a bank's brand and customer satisfaction in the long run (Xi and Hamari, 2020).

According to Wunderlich et al., (2020), gamification is the process of a transferring system, product, service, or activity that is similar to a gameful experience to facilitate behavioural or cognitive changes. The same author suggests, gamification is not limited to

mobile, desktop and technology. Furthermore, plastic cards are another major area where banking services have transferred gamification (Wunderlich et al., 2020). Chavez and Keat (2014) have proven that a tempting area is the game's visual appeal. Humans are visually attracted, and great artwork tends to fill customers with positive emotions (Pilarczyk and Kuniecki, 2014). The graphics in credit card design create the 'wow' factor, thereby enhancing gameplay exponentially (ANZ, 2022). As Azevedo et al., (2019) explain in an appraisal of credit card usage, banks are redesigning the look of credit cards to promote them as a preferred payment option among their customers. Furthermore, the design of these credit cards is inspired by the appearance of colourful and dazzling online games, tempting especially the younger generations (Lim et al., 2014) to apply for credit cards even if they do not require one (Ahuja, 2019). According to Agarwal et al., (2018), customers have the freedom to apply for and use any credit card they want. Nonetheless, banks are incorporating game elements into credit cards to make them look more interesting and appealing, as opposed to the outdated designs (Banker et al., 2021). For example, customers can personalise their debit and credit cards with images or a theme, as well as photographs of their pets and favourite cartoon characters (Bellekens et al., 2019; Lambie 2020). Customers are encouraged to use credit cards to purchase goods, pay bills, and carry out various transactions (Rivelli, 2021). The gamification element comes into the credit card when the customer earns points with each completed transaction, which can be redeemed for cash back or gift cards as more points are accumulated (Stockinger et al., 2015). According to Justin and Joy (2018), banks use reward points to encourage certain tasks such as online transactions, user engagement, and so on.

The gamification system in banking is built around customer behaviour, banking apps/internet banking, fun, and rewards by incorporating themes and game-like special effects for enhancing engagement (Bitrian et al., 2021). Customers in New Zealand can only

receive monetary reward points through credit cards usage; however, they are not rewarded with financial points solely for using the mobile app for banking purposes (RBNZ, 2022). As a result, some game elements, like themes, are integrated into the mobile app (Eklund et al., 2018; Paul, 2021), while others, like reward points, are integrated into credit cards (Stewart 2021; Covello, 2021). On the other hand, banks in other countries already provide customers with reward points for frequently utilising mobile banking and internet banking (Cera et al., 2020). The reviews of the literature suggest that gamification is generally effective at changing behaviour; there are often issues that prevent these studies from providing conclusive evidence as to why banks are investing in gamification and whether it is for the benefit of customers or solely for the benefit of banks. The discussion and emerging factors inspired this research, which investigated the impact of gamification on customer behaviours such as engagement, satisfaction, and intention to use banking services. There is undeniably a shift in public opinion towards gamification, a legitimisation of a concept that was previously restricted to the marketing field, discussed solely in terms of its claimed effectiveness in attracting and retaining customers (Stanley, 2021). Gamification practises are now rapidly gaining traction as design techniques may bring new opportunities for increasing motivation and changing behaviour.

#### **2.4. Gamification and Motivation**

Gamification is all about motivation in banking, and motivation is primarily influenced by two factors: external and internal (Psych, 2021). According to the majority of gamification motivation literature, a behaviour can be motivated either extrinsically or intrinsically (Yang et al., 2020). Extrinsic motivation refers to motivations that emerge from external goals or circumstances, such as being motivated to perform an activity to gain a reward (Yang et al., 2020). However, intrinsic motivation applies to self-directed behaviour

while being internally motivated, with no external factors influencing decision-making (Torres-Toukoumidis et al., 2021). The greater the impact of stimulation on individual behaviour, the more self-improvement behaviour is observed, and the more enjoyable and entertaining it is perceived; as a result, the individual is willing to perform the activity for more extended periods without receiving any extrinsic reward (Torres-Toukoumidis et al., 2021). To clarify, a behaviour may be primarily motivated by extrinsic motivation (e.g., monetary rewards for completing a task), but intrinsic motivations (e.g., enjoyment and fun) may still play a secondary role (Rybnicek et al., 2017). From a gamification perspective, the concept of motivation is an interesting one because it describes how multiple motivational factors, both extrinsic and intrinsic, can act as contributors to behaviour at the same time (Acosta-Medina et al., 2021). In other words, in gamification, motivation is observed when external factors (rewards) interact with internal factors (fun) (Dwivedi, 2021).

Beyond examining the effects and benefits of gamification there is still a lack of understanding about the factors that motivate bank customers to use gamification. Most research on why people are increasingly using gamification focused on technology adoption and acceptance (Wong, 2021). Traditionally, the literature on gamification adoption has differentiated between services and systems based on an individual's goals. Some use gamification for utilitarian purposes, whereas others use gamification solely for fun (Pasca et al., 2021). Gamification has several purposes, one of which is to make customer purchasing activity more enjoyable (Sehgal, 2021) while using credit cards. Furthermore, simply introducing a gamification mechanism, such as a reward, is insufficient for motivating customers (Zeng et al., 2017). The purpose of gamification in credit cards is not solely to offer reward points but also to provide a pleasant purchasing experience while using a credit card (Mitchell, 2020). The enjoyment gained from the behaviour (for example, collecting reward points via a credit card purchase) is considered enough to motivate and promote an

autotelic experience (Udoudom, 2021). As a result, the literature on gamification in banking presents an interesting finding for this research because it categorises gamification as providing both utilitarian benefits such as reward and hedonic benefits such as fun.

#### **2.4.1. Fun as an Intrinsic Motivation in Gamification**

People in general, want to have fun and enjoy their lives as much as possible, but many tasks and daily activities, such as banking, are not exactly entertaining (American Psychological Association, 2020). Gamification bridges that gap by making wearisome activities more enjoyable for customers and thereby changing their behaviour (Dinata, 2021). Gamification is associated with the provision of fun as a behavioural change approach, eventually contributing to the motivational aspects that encourage customers to use bank products more frequently (Baptista and Oliveira, 2017). Kim and Ahn (2017) suggest that fun is an evolutionary mechanism that rewards behaviours that increase people's self-satisfaction, such as an accomplishment, which mostly results in psychological outcomes. Fun can be mildly addictive, making it powerful material (Koster, 2020).

In banking gamification, the fun comes when a customer uses a credit card that earns reward points on every swipe (Rowan, 2020). This is an example of how gamification can be implemented without the use of complex technology or apps and still make it fun (Coppens, 2019). According to Cakirca (2022), the fun element in gamification is a mindset that encourages customers to act thereby rewarding them for completing tasks. It is worth noting that giving customers autonomy is dependent on the fun element of gamification (Sangroya et al., 2021). Customers should be aware that having a credit card with a reward points programme is not obligated (Srivastava et al., 2019). But when they choose their preference, they have the feeling that it was their decision, which increases engagement (Cuandra and Kelvin, 2021). In other words, the greater the customer's perceived freedom when using a

credit card, the greater the efficiency in triggering the customer's intrinsic motivation to engage in the purchase process, furthermore, satisfying their psychological needs (Wijayanto et al., 2019). According to Jardim and Silva (2018), generally, people engage in voluntary activities to have fun and feel pleasure. Customers have more fun when they participate in activities that they are interested in or that represent their personal value (Nicasio, 2021).

According to Renninger et al., (2019), they believe that customer competence is a necessary condition for triggering fun. Any external condition that makes customers feel controlled or forced to do something (for example, participation in an unpleasant task) reduces intrinsic motivation and eliminates the experience of fun (Ackerman, 2021). Gamification relies heavily on the voluntary enjoyment of customers (Dhahak and Huseynov, 2020). When people play a game, they are in an environment where they have autonomy and they participate in the game of their own free will (Eng, 2021). Game activities such as defeating other players, adapting strategies to achieve goals, and completing tasks can assist people in meeting their psychological needs for autonomy, competence, and relevance while also improving their inner experience of fun (Cherry, 2021). When external conditions meet internal psychological needs, external factors increase intrinsic motivation and enable customers to experience fun (Bontempi, 2019).

Wickes (2018) asserts that if banks want to change their customers' behaviour, they should offer what they want them to do novel and fun. According to fun theory by Koster (2020), novelty makes things interesting, and making something fun feels good. When activity is both novel and fun, it becomes intrinsically rewarding, and people enjoy participating in it (Li, 2021). Furthermore, it can have a long-term effect, because when people do something fun, they not only feel good about themselves at the time, but they also want to do it again in the future.

#### **2.4.2. Reward as an Extrinsic Motivation in Gamification**

In gamification, reward refers to stimuli provided by the bank to encourage action (Saputra and Rahmatia, 2021). Lewis et al., (2016) have proven (Gamified Interventions Operationalise Rewards) that gamification is a method of providing rewards that influence customers to internalise behaviours. The same author continues that in gamified interventions, rewards are a common feature. Depending on the context, rewards are referred to in a variety of ways (Anku, 2018). In the banking literature, monetary or financial points are generally referred to as rewards (Hwang and Mattila, 2021). However, several other rewards can be listed, such as discounts, benefits, gift cards, and cashback (Dimitrieska and Efremova, 2021). When categorising banking rewards, (Agbenyegah, 2021; Bank Incentive Structures, 2018) highlighted direct financial rewards such as getting paid for spending, and indirect financial rewards that do not have to be based when spending money, such as free travel insurance for older customers, an increase in credit limit for loyal customers, free products, and so on. Mucollari and Samokhin (2017) support the use of direct and indirect rewards to enhance motivation.

However, it is also important to mention that there are many cases where rewards do not affect certain customers. This is supported by Furdu et al., (2017) that motivators like reward points are ineffective for customers who are not naturally competitive, and if monetary rewards have a central role in gamification, these customers will eventually lose their interest in gamified products.

Gamification has become a popular technique for increasing credit card engagement, with the customer typically receiving immediate gratification for desired interactions (Garaialde et al., 2021). In its most common form, gamification attempts to motivate certain behaviours by creating reward structures similar to those found in games (Schmidt-Kraepelin et al., 2019). Credit cards are frequently paired with rewards such as points, cash-back, and

discounts to encourage repeated engagement (Vaughn, 2022). These methods are effective in encouraging customers to use their credit cards more frequently or increase participation in activities (for example, reward points for purchasing in-store/online with credit cards) (Prelec and Banker, 2021).

Agbenyegah (2021) stated customer engagement is likely to improve when banks offer rewards. Rewards engage customers on an emotional level to assist them to achieve goals that are meaningful to them (Papanaoum, 2019). This is supported by Rodrigues et al., (2016) desire of humans to be intellectually stimulated and creative by completing a complex task. When customers achieve these goals (completing a complex task), whether it is big or small, they feel satisfied and sometimes successful, motivating them to do and achieve more (Sudiardhita et al., 2018). According to Link et al., (2014), when customers receive a reward, they experience a positive emotion correlated to their accomplishment, encouraging them to perceive more of these positive emotions. The neuroscience literature explains that when customers receive a reward, special pathways in their brain are activated that not only make them feel good for getting the reward but also activates them to pursue more of those feelings (Drexel University, 2017).

The majority of the banking literature has not referred to the impact of reward points on customers' purchase behaviour. According to Jain et al., (2020), the integration of gamification is helping banks to stimulate customer spending. Customers who are given a sense of reputation through reward points become brand advocates (word of mouth). Customers will feel valued if they receive discounts or free merchandise in exchange for a purchase via their credit card. This will increase their brand loyalty for both banks and merchants. Many banks have seen an increase in credit card spending since launching the new rewards programmes, which is one of the many gamification elements, says Jain et al., (2020). Research by Teoh et al., (2013) asserts that the long-term impact of reward points

programmes increases the purchase behaviour of the customer; meaning customer engagement is achieved.

## **2.5. Outcomes**

### **2.5.1. Engagement**

Stringfellow (2018) defines engagement as a customer's behavioural expressions towards bank products and services, including direct and indirect credit card contributions; outlines direct contributions as customers' credit card purchases of a bank's offerings. While increased credit card usage is typically associated with increased customer engagement. Engagement is also seen when credit card purchase behaviour is low, but indirect customer contributions are high. Customers' non-purchase behaviours that add value to the bank, such as app usage, feedback, suggestions, and website traffic, are examples of indirect contributions to engagement. This includes credit card reward points redemption behaviour as well (Stringfellow, 2018).

Furthermore, Bitrian et al., 2021 added that the bank's gamification apps satisfy customers' autonomy and relatedness requirements, resulting in increased app usage over a longer period. Reciprocal benefits are also linked to a customer's understanding of the recognition they receive in a gamified application (Bitrian et al., 2021). However, Negri et al., (2020) argue, some banks simply refer to their apps gamification by adding rewards, badges, points, and leader-boards. Although some take a more deliberate approach, considering customer's and credit card user's goals and motivation, and attempting to identify the appropriate gamification mechanisms to enable substantive interaction and behavioural change (Negri et al., 2020).

According to engagement literature, customer engagement is an emotional connection between a customer and a bank in which the customer is willing to interact and communicate

with the bank (Jain et al., 2020). This often interprets to a customer willing to try new and multiple products in exchange for rewards and achievement related to gamification features, reducing the customer's risk of switching banks (Jain et al., 2020). Immersion-related gamification elements were found to be positively related to customer engagement (Xi and Hamari, 2020).

Intrinsic motivation, which refers to sources of motivation inherent to a behaviour, such as fun and enjoyment in gamification, participating in an activity to provide opportunities for cognitive development, also contributes to customer engagement (Rapp et al., 2019). Within the banking industry, gamification incorporates the enjoyable elements of games, such as fun, play, and entertainment, into banking activities to increase customer engagement (Baptista and Oliveira, 2017). For example, when banks add gamification to credit cards, it creates a win-win situation (Goama, 2021). It increases customer engagement with the bank, and it ensures that the customer finds some value and is rewarded for participating in the task (Zainuddin and Keumala, 2021), which in this research is related to credit card purchases. The offering of badges and monetary rewards, or a combination of both, improves customer engagement and increases product and service usage, implying that gamification is a successful customer engagement strategy (Uford and Duh, 2021).

### **2.5.2. Satisfaction**

Customer satisfaction is fundamental to gamification, and it has long been regarded as one of the primary goals of gamification strategy (Hanus and Fox, 2015). According to Zaid and Patwayati (2021) satisfaction is a cognitive and emotional evaluation of the customer's interaction with the bank. Loo et al., (2021) also proposed that satisfaction consists of a partly cognitive and partly effective evaluation of a customer's experience in the banking industry. Satisfaction encompasses both cognitive judgement and affective responses (Palaci et al.,

2019). In other words, satisfaction refers to a customer's feelings of pleasure or disappointment as a result of a comparison of perception and expectation (Fauzi et al., 2021). Zakaria et al., (2013) suggests that satisfaction is a pleasurable fulfilled reaction, whereas dissatisfaction is an unpleasurable fulfilled reaction. Furthermore, Azhar et al., 2021 asserted that satisfaction is a positive and affective behaviour displayed by a customer as a result of the appraisal. Meanwhile, in the banking industry, as a bank maintains a positive relationship with its customers, multiple desirable outcomes are likely to occur (Dat and Tien, 2021).

In gamification theory, satisfaction is the critical and dominant role because it is the desired outcome, which indicates that gamification transforms both the initial and post-experience of customers (Brunello, 2014). However, recent research has discovered that simply satisfying customers is not enough to ensure success in today's competitive environment (Szyndlar, 2021). Increased customer satisfaction has the added benefit of reducing reliance on credit card purchases to attract and retain customers (Buell and Choi, 2021). Poor customer satisfaction can cost banks money by driving customers away to the competitors (Pan, 2020). This is well documented by Denecker et al., (2020)'s McKinsey and Company (global payment report), 74% of customers are likely to switch banks if they find banking activities to be too time-consuming. Even worse, 51% of customers say they will never open another account with that bank (Denecker et al., 2020). According to Aparicio et al., (2021), gamification predicts customer behaviour better than traditional satisfaction models.

Several banks have implemented gamification in credit cards to retain their best customers and allow them to redeem reward points for gifts and services (Starts, 2019). Gamification in banks through reward points have created a great deal of fun and joy for the customers (Hashim et al., 2021). Gamification is considered a tool to compete with competitors and maintain bank performance (Emam and Aziz, 2021). Gamification enhances

customer satisfaction and long-term customer relationships (Ellipsis, 2021). Reward points in credit cards strengthened customer loyalty in banks (Liu, 2017). Dospinescu et al., (2019) have shown that higher credit card reward points depend on bank satisfaction. Satisfaction is considered a positive and emotional behaviour based on the positive impression and appraisal of their purchase experience with the preferred credit card (Power, 2021). As previously discussed, points, badges and rewards in gamification increase customer engagement; nevertheless, it is not an actual reward but intrinsic motivators that make customers satisfied because they achieve something that requires greater focus to achieve, such as autonomy, mastery and purpose (Payne et al., 2019). Banks use a smart combination of each of these psychological triggers to craft their gamification strategies (Izraylevych, 2021). According to Alnsour et al., (2021), this confirms a positive relationship between customer satisfaction and gamification.

### **2.5.3. Intention**

The academic community has considered it appropriate to study intention using conceptual frameworks (Baba and Baharudin, 2020). The willingness to use a product or service again in the future is referred to as intention (Pena-Garcia et al., 2020). For example, the Technology Acceptance Model (TAM) proposes that actual technology use is driven by behavioural intention, which is influenced by attitude towards use (Park and Park, 2020). The TAM model is widely used and supported by scholars in the study of intention to use because it enables understanding of the relationship between customer intentions and behaviours (Ruiz-Alba et al., 2019). According to Wayne (2019), intentions are the single best predictor of most planned behaviour and intentions relate to how far customers are willing to go to complete the task, as well as how much effort they intend to put into it. According to Ha (2020), intentions are the result of attitudes, perceived behavioural control, and subjective

norms. According to Ajzen (2020), subjective norms are the opinions of peers, family, friends, and others on the decision to engage in a task. Ajzen (2020) further explains that the degree to which a customer has a favourable or unfavourable opinion on a product indicates personal interest. These attitudes are formed based on beliefs about the consequences (intrinsic and extrinsic rewards) of the contemplated behaviour (Vilnai-Yavetz and Levina, 2017), which in this research is the intention to use a credit card with reward points. Ajzen (2020) also mentions intention includes customers' opinions, self-confidence, and self-assurance in their ability to perform the desired behaviour.

One of the most widely used forms of gamification is a reward programme integrated with credit cards, leading customers to enjoy the credit card purchasing process (Walden and Forman, 2021). Accumulation of the reward points encourages customers to buy more products and leads them to prolonged usage of credit cards. They want these rewards because they can have something in exchange (services or goods) for the rewards they collect (Marescalco, 2019). The customer strives to obtain the rewards because they are useful to them, and they are ecstatic simply to obtain them for their own pleasure. Alshurideh et al., (2020) discovered that by providing the right type of reward to customers, they performed better and changed their primary intention. As a result, rewards in the gamification platform changes customer intention to use their credit cards often (IRF, 2014).

Gamification has been shown to help build positive attitudes through certain activities, such as gaining rewards and participating in a task (Xu et al., 2020). As discussed previously, customers must voluntarily participate in purchasing activities designed with gamification components, and only then customers will continue to put effort (use credit card frequently) to earn rewards for enjoyment (Raghavan, 2021). Enjoyment refers to the extent to which a customer's experience ends up in pleasure and excitement triggered by the gamified environment (Hammedi et al., 2019). Accumulating reward points experience must

generate fun and enjoyment in customers in order for gamification to affect customer intention (Jefimovs and Koeck, 2021).

Customers' attitudes towards the acceptance and use of technology are influenced by the various utilitarian, hedonic, and social benefits derived from gamification (Hamari and Koivisto, 2015). In general, attitudes are formed on the assumption that certain outcomes are associated with specific behaviours (Ajzen, 2020). Positive or negative values are assigned to these beliefs and outcomes (Cherry, 2021). Furthermore, along with social influence, attitudes towards behaviours have been shown to be reliable predictors of behavioural intentions (Patil et al., 2020). Matsuo et al., (2018) explained that social influence is important in establishing accurate perceptions of reality and responding appropriately, as well as forming social relationships and maintaining a positive self-concept. The same authors also reported that customers seek advice on their social networks when trying out new products and services and are impacted by perceived social pressure from significant others. Lastly, Sitorus and Govindaraju (2019) added that social influence significantly affected the intention to use credit cards based on trust. In the context of gamification, one's attitude towards the gamified service can also influence one's desire to use it (Fairweather, 2020). In addition, the relationship between gamification and intention to use is investigated as part of this research.

## **2.6. Conceptual Framework and Hypotheses Development**

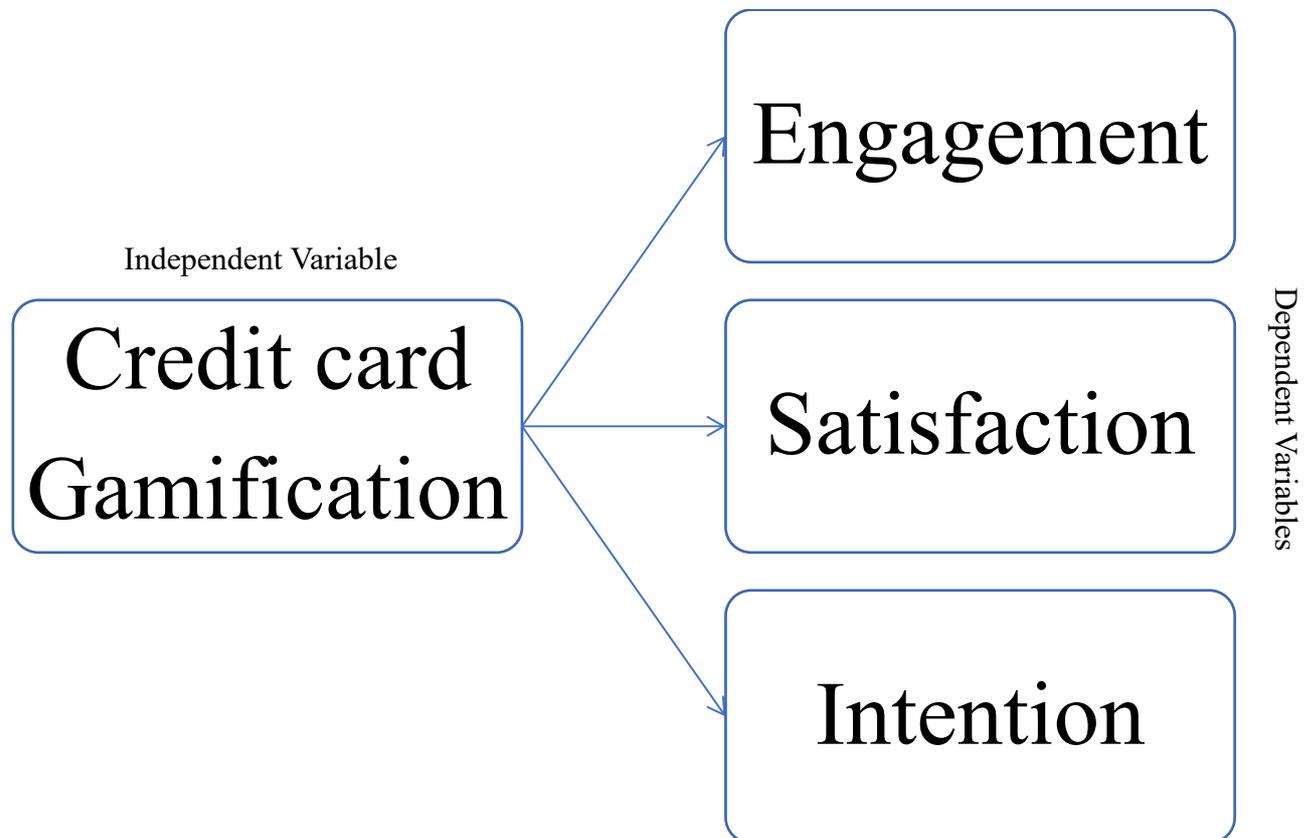
The conceptual framework model shows how the three variables are determined by the credit card's reward points offered by a bank. Based on a thorough review of prior literature on gamification, an understanding of banking customers' engagement, satisfaction, and intention emerges (Uford and Duh, 2021). Credit card users' engagement is increased by rewards and the fun feeling of accumulating financial points, which bank customers find

satisfying (Saputra and Rahmatia, 2021). Customer satisfaction leads to credit card re-purchase, which influences their intention to use the product (Batheja, 2020). Anwer (2018) supported this notion that satisfaction is the reflection of the customer of their previous purchase. The more customers buy, the more engaged they are with the product, which can be seen in the early stages of the customer lifecycle, and customer satisfaction is often the result of that engagement (Anwer, 2018). Secondly, Roberts-Lombard and Petzer (2018) asserted that a high level of satisfaction leads directly to positive product purchase intention.

Based on this exploration, a conceptual framework for this research has been developed (Figure 1), depicting the relationship between gamification and its outcomes; including the three dependent variables (engagement, satisfaction, and intention), which are considered to be important outcomes in gamification studies (Bovermann and Bastiaens, 2020), and one independent variable (credit card gamification). This conceptual framework model was developed to examine the effects of gamification on credit card users. This research combines the aspects of fun-theory (engagement and satisfaction) (Wickes, 2018) with the technology acceptance model (intention to use) (Park and Park, 2020) to better understand the effects of gamification on the behaviour of bank customers using credit cards. The conceptual model (Figure 1.) depicts the relationship between gamification and outcomes from credit card usage.

**Figure 1**

*Conceptual Framework Depicting the Relationship Between Gamification and its Outcomes*



This conceptual framework model is underpinned by fun theory addressing customer engagement, which happens when customers enjoy interacting with the gamified tool's elements (credit card points), displaying a high level of motivation and excitement as credit card users (Mohammadi, 2020). When this happens, the customer becomes involved in the point-collection process, facilitating the accumulation of reward points (Chun et al., 2019). This factor is influenced by behaviours related to task completion (credit card purchase) and the likelihood of earning more points (Okubo, 2020). Customers are likely to find a gamified experience fun if it meets these criteria (Acosta-Medina et al., 2021).

Therefore, this research proposes the following hypothesis:

H0<sub>1</sub>. Gamification does not affect customer engagement in the banking industry.

H1. Gamification affects customer engagement in the banking industry.

Apriyanti and Pusparini (2021) adopted fun theory and highlight fun as any interpersonal, social, or humorous task that can provide individuals with entertainment, pleasure, and a sense of enjoyment. Consequently, fun will effectively increase satisfaction if the individual feels engaged with the activity (Chignell, 2018). Several studies have shown that offering a reward for engaging in a fun activity reduces customers' subsequent interest in the task (Santos-Longhurst, 2019). However, Lee and Chen-Yu (2018) argue that adding fun to an activity does not affect a customer's perceived interest. Chamberlain and Zhao (2019) concluded that fun activities do not exactly translate into satisfied customers and neither does having fun mean customers are always satisfied. However, Aparicio et al., (2021) suggest there is a positive relationship between customer satisfaction and gamification, which involves offering customers reward points for fun.

Therefore, this research proposes the following hypothesis:

H0<sub>2</sub>. Gamification does not affect customer satisfaction in the banking industry.

H2. Gamification affects customer satisfaction in the banking industry.

According to the TAM, customers' high acceptance intention can influence users' intention to recommend the technology (gamification) to their friends and family members (Rahi et al., (2020). It was found that customers who have a higher intention to adopt new technology are more likely to become adopters and to recommend the technology to others (Hubert et al., 2019). In the banking industry, gamification has been used across diverse areas, including websites, apps, and credit cards (Fairweather, 2020). Perceived enjoyment/gamification positively impacts customer intention (Dhahak and Huseynov, 2020). Customers' intentions to use credit cards are influenced by game elements and mechanics such as enjoyment, ease of use, fun, rewards, and points (Aron and Scala, 2020). Reward points impact customer decision-making and encourage customers to use credit cards frequently to accumulate financial points (Aron and Scala, 2020). This implies that customers

who have a positive attitude towards gamification are more likely to recommend and reuse gamified products in the future.

Therefore, this research proposes the following hypothesis:

H0<sub>3</sub>. Gamification does not affect customer intention in the banking industry.

H3. Gamification affects customer intention in the banking industry.

## **2.7. Summary**

Following the literature review of the gamification mentioned above, it was discovered that the majority of gamification studies reported positive engagement outcomes from gamification implementations. Also, reward programmes are a scheme that offers points to the customer for purchases they make, allowing them to collect points and later exchange them for products, services, and discounts. While reward programmes are common, they are not always utilised effectively (Black, 2020). Different banks offer different types of reward programmes (Joblonska, 2019); a good reward programme should be easy to use with no complicated restrictions (Bernazzani, 2021). Moreover, banks must implement intrinsic motivational factors when implementing gamification to ensure that customers are satisfied with the behaviours, they have developed to maintain motivation (Dahlstrom, 2017). This implies that banks should consider integrating game elements like rewards, points, and monetary value to increase customer engagement (Kim, 2020). Dahlstrom (2017) suggested that depending too much on reward points might be risky, and an over emphasis on game elements and external rewards could decrease customer motivation. However, prior studies did not suggest which game elements and mechanisms are the best for customers or context because of inconsistent gamification definitions (Rodrigues et al., 2019). But past research has shown there are many ways to implement gamification, and reward points are one approach use in the banking industry (Jain et al., 2020). As a result, this research investigated

the effects of gamification mechanisms on the behaviour of bank customers using credit cards; customer engagement, satisfaction, and intention.

## Chapter 3

### Research Methodology

#### 3.1. Introduction

Following a review of the literature and an explanation of the conceptual framework, this chapter will provide a detailed description of the methodology selected for this research. Firstly, the research design will be discussed, including the research philosophy, from which it will determine the used research strategy. Followed by an explanation of why the methodology used in this research was appropriate and which sampling methods were used for data analysis to find out the effects of the gamification mechanism on the behaviour of bank customers who use credit cards. The final section addresses the ethical considerations.

#### 3.2. Research Philosophy

This research reflects post-positivism principles because the focus was on human behaviour to minimise subjectivity and bias as much as possible while investigating various truths and acknowledging that the interpretation of those truths is always through the lens of experiences and that those truths may change during or after this research attempt to investigate them (Landers et al., 2018). Post positivists believe in an objective reality that is perceived through subjective interpretation (D’Cruz et al., 2018). As post-positivist research, this research shared a conceptual framework model that investigated various design techniques to add game elements into existing real-world processes. Gamification studies are outcome-focused. In many ways, current gamification research has a stronger foundation in modern social science. To draw meaningful conclusions, this research focused on human behaviour, which is reactive to gamification and interventions. Furthermore, this research studied gamification in-depth through a literature review, integrating concepts and points of view. Additionally, it may be possible to gain perspectives into how gamification can be

used in the banking industry to increase customer engagement, satisfaction, and intention with products and services, resulting in significant results for credit card users.

### **3.3. Research Design**

The conceptual framework model presents a rationale for using quantitative independent and dependent variables relationships, therefore providing the basis for a quantitative research methods approach. It served as the foundation for developing the hypotheses to be tested using a research strategy that includes systematic and methodical tests. According to Stockemer (2019), the quantitative method is the best for assessing relationships between variables and testing hypotheses. This research took a deductive approach, establishing a conceptual framework model based on data gathered from prior literature (Serenó, 2021), most of which was confirmatory. The main goal of using this approach was to explain any causal relationships between variables based on the findings (Al-Ababneh, 2020). Understanding the effects of gamification on bank customer behaviour can assist banks and other financial institutions improve their products and services, while customers can make better financial decisions when using credit cards.

A cross-sectional experimental design was adopted and consisted of two possibilities where Scenario A is about high gamification and Scenario B is about low gamification. The imaginary scenarios in both set of questionnaires are the only one that is a quasi-experimental design. The directionality problem is addressed in this research by manipulating the independent variable (credit card gamification) and selecting a comparison group of credit cardholders in both scenarios A and B at the same time. According to Barnes et al., (2022), when it comes to the difference between quasi and true experiments, a true experiment is one in which all the variables are controlled, or the researcher can keep the other variables constant while manipulating only one. However, the researcher could not do so in a social

science context. Likewise, in this research, the variables cannot be controlled, hence the adoption a quasi-experimental approach.

The main goal of the quantitative method chosen was to investigate and measure the relationship between gamification and customer satisfaction, engagement, and intention using statistical techniques. To ensure the research's reliability, data was collected in a standardised manner using a quantitative method (Bhandari, 2020). Because the primary data for the research was all collected at one point in time, a cross-sectional method was used to conduct the research due to a time constraint imposed by the research duration.

### **3.4. Data Collection Approach**

An online questionnaire using Qualtrics was adopted as a data collection tool (Appendix C). In comparison to other methods of collecting data, research strategies based on online questionnaires allow for more cost-effective data collection while also making it easier to interpret and evaluate the results (Debois, 2022). The questionnaire was entered into Qualtrics, an internet-mediated questionnaire platform that was used for data gathering both in-person and online. Qualtrics have varieties of questionnaire distribution means, and can be printed, allowing for in-person data collection, and simplifying data collection procedures (Molnar, 2018). Additionally, Qualtrics provided a full report with visualisations and enabled all data to be transferred directly to Statistical Package for Social Sciences (SPSS). Another feature was that the researcher could see how long the participant took to finish the questionnaire. In other words, Qualtrics includes the time it took to complete each answered questionnaire and the data gathered from the questionnaire. As a result, the researcher noticed the questionnaire that was completed in a short amount of time, and those responses were excluded from the questionnaire. This method ensured that the data collected reflected the perception of the participants rather than being an outlier.

### **3.4.1. Questionnaire Design and Purpose**

The researcher considered several challenges when designing the questionnaire, including the use of simple and easy to comprehend English, to avoid the use of jargon words, and ensure an easy-to-navigate questionnaire. A Likert scale questionnaire (Appendix C) was chosen for the research 's data collection method as it encourages the questions to be completed with an adequate level of precision, enabling the participant to feel more anonymous, which is essential for a more accurate result (Steinmaurer et al., 2021). The questionnaire consisted of three elements:

- (i) The gamification scenarios for the experiment.
- (ii) The questionnaire to measure the perception of the dependent and independent variables.
- (iii) The descriptive questionnaire.

#### **i. Gamification Scenarios for the Experiment**

Two scenarios (Scenario A and Scenario B) were created to collect data from a single population. The questionnaires for both scenarios were identical, with Scenario A referred to as 'high gamification' and Scenario B referred to as 'low gamification.' The difference between these two scenarios (Scenario A and B) was the credit card point's value, with high credit card points value implying that a customer would earn 20 points for every \$100 spent (Scenario A) and low credit card points value implying that a customer would earn five points for every \$100 spent (Scenario B). The goal of administering multiple scenarios was to compare the results and determine whether earning high-value credit card points affects customer's spending habits more than earning low-value credit card points.

The questionnaire was divided into four sections (consent, scenario, perceptions questionnaire, and descriptive questions), each serving as a single, sequential body for the participant. The process began with a consent form, which took about five to ten minutes to

complete before proceeding to the questionnaire. The consent form included a brief explanation of the research topic and what to expect from the questionnaire, as well as a request for the participant's permission to participate. If responding online, selecting 'no' to consent immediately ended the. The second section of the questionnaire depicted a scenario in which the participants were asked to imagine having a credit card that awarded points based on their spending habits. The participants were told that the more money they spent, the more points they could earn and that the points they earned can then be exchanged for goods and services. The third section directed the participant to the Likert scale questions, which asked them to answer questions based on the previously presented scenario. This section consisted of 23 items divided into four subscales: gamification, engagement, satisfaction, and intention. The last section consisted of a descriptive questionnaire.

**ii. Questionnaire to Measure the Perceptions of the Independent and Dependent Variables**

The gamification questions were developed from the research by Leston (2015) and were a contextual way of measuring the participant's opinions in semi-experimental tasks. The questions for the gamification variable in this section were chosen based on credit card usage judgement because they were found to be reliable in several types of research and adequately measured the research's independent variable. The questions were administered using a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

Likewise, the engagement scale was used, which is a self-report questionnaire developed by the research O'Brien et al., (2018) to measure participants' experience with a credit card that offers points. These questions were not directly related to the scenario but rather to the participant's own experiences. The scale was created with six items, including "I found it confusing", "I found it rewarding", "I found it easy", "I felt frustrated", "I found it interesting", and "I found it worthwhile" (Appendix C). After being regarded as adequate for

the purpose of measuring engagement, all items were used for this scale with modification to the context of this research. There were some questionnaires on the reversed scale among these items, which meant that while most items refer positively to the measured factor, some refer negatively. These items were correctly reverted to the final score during the data analysis.

Moreover, the satisfaction scale was designed research by Patzer (2018) and was adopted into the questionnaire (Appendix C). According to the author, this scale was developed based on an observation of the participant's attitude towards the satisfaction of collecting credit card points. It consists of five items. Unlike the previous scale, it does not have negative items; the questions were just scrambled in the same way as the previous scale. (Appendix D)

Lastly, the intention questionnaires were developed by combining three studies Hsieh and Wen (2011); Kosa and Uysal (2020); Xu et al., (2020). The items were modified to the context of the intention questionnaires by removing unrelated subscales and questions that were not part of this research or changing other questions to adapt to the context without changing its purpose. For example, instead of using the phrase "I will recommend gamification to others," the sentence "I will recommend to others that they collect points when they use a credit card" was used instead. Furthermore, instead of "I predict I will play Pokemon in the future." the sentence was "I predict I will collect more points in the future" (Appendix C). Following this procedure, the five items on the intention scale were rearranged in their proper sequence, as per the scale manual's instructions (Liedke, 2021).

### **iii. Descriptive Questions**

Finally, a brief set of five demographic questions was included, with the purpose of understanding the participants' demographics and enabling analysis to determine whether any of the demographic profiles conflict with the credit card gamification to bank customers

outcomes (Toor, 2020). The participants were asked whether their bank offers credit card rewards, their preferences, and desires for various types of rewards, and their gender and age (Appendix C).

### **3.5. Pilot Test**

In New Zealand, personal networks were utilised and given the questionnaire as a test run. The questionnaire was distributed via email and social media and was active online for two weeks (only for the pilot testing). As a result, 45 people participated in the pilot test, 11 for Scenario A and 34 for Scenario B, and all of them completed the questionnaire online. While not everyone had used a credit card before, especially one that offers reward points (only 14 did in both scenarios), participants were requested to pretend to have used one to test the questionnaire. Following the completion of the pilot testing, it was necessary to make a few phrasing changes. Some of the participants stated that they did not have credit cards but that they had in the past. As a result, the question "Have you ever had a credit card in the past?" was added. This way, ensure that more people were able to participate in the research. A brief overview of gamification was also included in response to suggestions.

### **3.6. Procedure**

An online questionnaire in Qualtrics was used to gather the data. Data collection began after the questionnaire had been designed, structured, piloted, and the research approved by the Otago Polytechnic Auckland International Campus Ethics Committee. The data was collected between 24 October 2021 and 27 December 2021. It was difficult to collect data on a large enough scale due to the spread of COVID-19 and lockdowns in Auckland, preventing the researcher from reaching out to participants in a different part of Auckland and contacting them in person. The researcher, based in Albany, Auckland, went to

one local bank, asked to speak with the manager, and explained the purpose of the research. This conversation ensured the confidentiality of the bank customers involved in the research. The manager was also given a copy of the questionnaire to ensure that no private or sensitive questions were included. While the bank was a branch of the same bank where the researcher currently works, permission was granted immediately because the researcher agreed to use the intercept technique data collection method, which involved the researcher standing outside the bank and asking people coming in and out to participate in the questionnaire. Due to the New Zealand Government's social distancing guidelines, the researcher printed a QR code on A4 paper that potential participants could scan with their smartphone, automatically redirecting them to the questionnaire page. Following that, data was collected in person, allowing the researcher to further clarify the research and the questionnaire to the participants while also trying to remain available to answer any questions.

Secondly, as the researcher works in the banking sector in New Zealand, and contacted colleagues, first verbally and then in writing via the work e-mail, with permission from the management. The researcher also asked them to recruit other participants from their personal network to participate in the questionnaire using the snowballing technique. The researcher then sent e-mails to the individuals listed as family and friends. Two weeks after the e-mails were sent, they received a new e-mail reminding them to complete the questionnaire. The questionnaires were also distributed through various online platforms such as Facebook Messenger and WhatsApp. The intention was to recruit customers from diverse banks to participate in the research. While waiting for responses to the questionnaire, the researcher invited via email students and lecturers from Otago Polytechnic Auckland International Campus (OPAIC) to participate to maximise the sample size. Because the researcher was unable to interact face-to-face with students and lecturers at OPAIC due to the

COVID-19 lockdown, it is assumed that the response rate was not as expected. Only six people responded from OPAIC to the questionnaire out of 77 emails sent.

A total of 110 responses (Appendix H) were received from emails and questionnaires distributed through various channels. Only 88 effective responses (n=44 for low gamification and n=44 for high gamification) were prepared for data analysis. Even though all 110 entries could have been used for the analysis, the researcher chose not to use them all. The data collected from participants went through a cleaning and screening process. This was accomplished in stages, beginning with the deletion of entries that had a large number of missing entries. According to Papageorgiou et al., (2018), missing data can reduce the statistical power of the research and can produce biased estimates, resulting in invalid conclusions. The data was then screened for outliers and scores indicating straight-lining, as well as participants who responded, "Strongly Agree" or "Strongly Disagree" to all questionnaires, which would have skewed the analysis results.

### **3.7. Participants and Sampling**

Participants for this research were the credit cardholders. This applied to all New Zealand bank customers who own credit cards, not just specific to one bank's customers. Sampling was used to make the research more manageable and precise because it was impossible to collect data from all members of the studied population. The research used non-probability convenience sampling, in which the researcher explained the research's topic and potential participants chose whether or not to participate in the questionnaire. Due to time constraints the researcher wanted to collect data diversely as well as to improve representativeness in a short period, so the non-probability convenience sample was adopted as it had recommended for quantitative studies (Borgstede and Scholz, 2021).

Four pieces of information were required to calculate the minimum number of participants required to form an adequate sampling:

- (i) level of confidence in the data,
- (ii) the margin of error to be tolerated,
- (iii) the types of analyses to which the data will be submitted, and
- (iv) the size of the target population (Saunders et al., 2019).

It was not easy to determine the sample size. However, research assisted in obtaining a rough estimate. For example, Kelders et al., (2018) used power for an independent t-test with a Cohen's D of 0.5 and discovered that the sample size required for the research had a substantial power that could become quite large. As a result, the sample size recommended for power analysis is much larger than necessary. However, they also stated that a sample size of 50% power is required for detecting medium effective sample size; this was support by Brom et al., (2019); Kim and Castelli (2021). That for the research 's power is to be around 95%, a sample size of around 100 is required (Sullivan, 2020).

In contrast, (Taherdoost, 2016) recommended calculating sample size using Cochran's formula, which is shown below:

Summing prevalence 50%

Z = 90% (1.64) Confidence interval

P = 50% (0.5%) estimate population

E = allowable error 10% (0.1)

N = sample population

Q = 1-p

Then we have,

$N = Z^2PQ/E^2$

$= 1.641^2 \times 0.5 \times (1-P) / 0.1^2$

$= 67.5$

As a result, the target sample size for this research was estimated at approximately 100. Furthermore, to examine customers' engagement, satisfaction, and intention in the context of bank industry gamification, it is essential to select only participants who have experience collecting reward points via credit card purchase, as such participants were likely to have a better and clearer recollection of their credit card experience.

### **3.8. Data Analysis**

To simplify the data entry, data were checked for completeness proper coding, and data was entered in a SPSS version 28 (Appendix H). Data was analysed using descriptive and inferential statistics (Appendix E and G). Descriptive analysis was used to infer the parameters of credit card users. The absence and presence of a relationship between gamification and the outcomes (engagement, satisfaction, and intention) were observed and investigated using correlation analysis (Appendix F). Correlation analysis also helped measure the degree to which the two variables of this research were related, demonstrated in the Scatter plot. Following that, t-test analysis was completed to determine whether there was

a significant difference between the high and low gamification groups (Scenario A or B). More specifically, a parametric test (t-test) was used to explore whether the response rates were higher with Scenario A or B. Gamification was included as a group variable, while other variables like the scale of (engagement, satisfaction, and intention) were included as test variables, using a 95% confidence interval. This research's hypotheses also were tested using t-test analysis. Data has been presented through an academic table. Refer to the following section (Chapter 4) for detailed information on the data analysis.

### **3.9. Ethical Considerations**

This research was approved by the OPAIC Ethics Committee (Appendix A) after considering all of the aspects listed below and was approved on 24 October 2021, and only the data collecting procedure was initiated. The participants were all banking customers in New Zealand.

The researcher collected primary data via a questionnaire conducted through Qualtrics. Before the questionnaire started, participants were asked to agree on an informed consent form online, following the guidelines (Appendix B) of OPAIC's Research Ethics Committee. Moreover, the consent form informed participants they had the right to withdraw from the research at any time. Participants had an option to complete the questionnaire in one of two ways: by scanning the QR code or by clicking the link in the email. In addition, before sending the questionnaire link to the potential participants email addresses, participants were fully informed (for example, before sending an email with a survey link to co-workers, they were asked if they wanted to participate in the survey). The questionnaire responses were not connected to the participants' email addresses, or any other data submitted in any manner that may be used to identify them individually. Participants were informed that their responses would be treated as confidential and only be used for academic purposes and this specific

research, and the collected data would be protected by the Privacy Act 1993 No. 20 Legislation (Parliamentary Counsel Office, 2020).

To avoid any privacy violations, questions about participant's financial information were not asked during the questionnaire. Instead, the information sought from participants was on their perceptions of participating in the game they have experienced and how it has affected outcomes such as customer engagement, satisfaction, and intention when using their credit card. The information collected was about the participant's perceptions of the scenario. Furthermore, the data reported is aggregated perception data, and no individual participant name has been reported. Any raw data used on which the results are based will be stored for seven years, after which it will be destroyed in accordance with OPAIC policy. Except as stated above, participants were not bombarded with spam emails, physically or psychologically harmed during this research.

## **Chapter 4**

### **Data Analysis**

#### **4.1. Introduction**

Based on the methodologies described in Chapter 3, this section will detail the findings and links to the research's objective: the effects of gamification mechanisms on the behaviour of bank customers using credit cards. From the data collected, the analysis of the quantitative data to evaluate the relationship between gamification and behaviour of credit card users is described. To analyse the role of gamification and its effects on engagement, satisfaction, and intention, three-part analysis conducted: descriptive analysis, correlation, and t-test analysis is presented.

Firstly, the descriptive analysis includes the frequency, percentage, and mean of demographic data, which assisted to categorise the total 88 participants into different age groups, genders, and reward credit card users, and then classified them into low and high gamification groups. Next, correlation analysis was undertaken to measure the strength and direction of the linear relationship between the independent (credit card gamification) and dependent (satisfaction, engagement, and intention) variables and compute their association. This allowed the researcher to examine whether the relationship signifies perfectly positive or negative. Thirdly, T-test analysis was performed to compare means differences for engagement, satisfaction, and intention for participants in the high and low gamification groups.

#### **4.2. Descriptive Analysis**

This section presents the descriptive analysis of the demographic data such as age, gender, reward-credit-cardholders, and desired reward types, using mean, frequency, and

percentage to indicate the participant's demographic characteristics and emphasise the potential relationship between the participant and the gamification.

#### 4.2.1. Age and Gender

**Table 2**

*Participant's Demographic Data on Age and Gender*

N = 88			
<b>Variables</b>	<b>Low Rewards No. (%)</b>	<b>High Rewards No. (%)</b>	<b>Total Number of Participants No. (%)</b>
<b>Age Groups in Years</b>			
18 to 24	4 (9.1)	8 (18.2)	<b>12 (13.6)</b>
25 to 35	18 (40.9)	22 (50)	<b>40 (45.5)</b>
35 to 54	19 (43.2)	11 (25)	<b>30 (34.1)</b>
55 to 74	3 (6.8)	3 (6.8)	<b>6 (6.8)</b>
<b>Gender</b>			
Male	17 (38.6)	22 (50)	<b>39 (44.3)</b>
Female	27 (61.4)	22 (50)	<b>49 (55.7)</b>

Table 2 represents the various age groups of the participants that took part in the research. The table above shows low and high gamification participants separately, as well as combining and presenting them all together. Nearly half of the participants (45.5%) are between the ages of 25 and 35, with the lowest percentage of participants (6.8%) being between the ages of 55 and 74. Secondly, 34.1% of all participants are between the ages of 35 and 54, representing one-third of all participants. The third-highest response rate was 13.6%, which falls into the age group of 18 to 24 years. In terms of gender, the data shown in Table 2 are rather balanced, with more than half of the participants (55.7%) being female and 44.3% being male.

**Figure 2**

*Crosstabulation Showing the Different Age Groups and Gender*

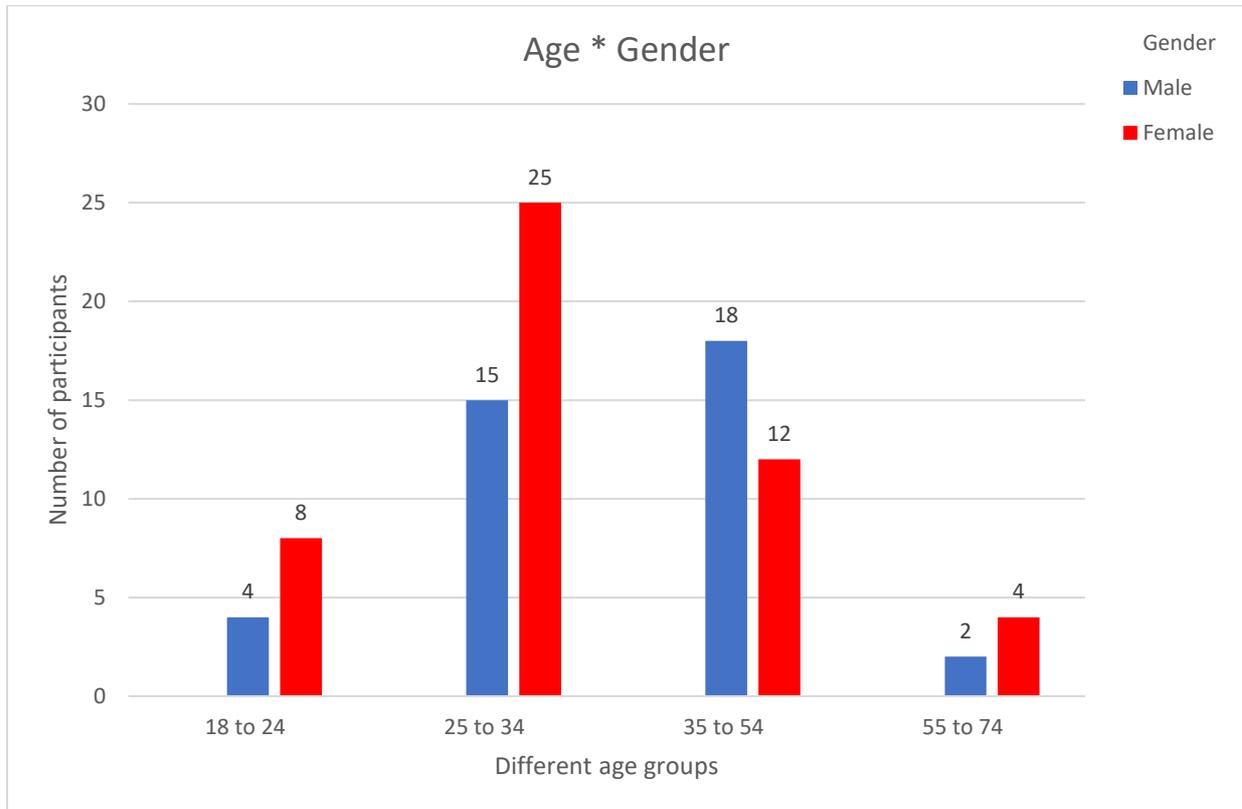


Table 2 displays the number of males and females who participated in the research, categorised into different age groups. Females (n=25) between the age of 25 to 34 were the most frequent participants and males (n=18) in the 35 to 54 were the second most frequent participants between the age group of 18 to 24, the youngest participants was higher than the oldest age group, which includes those aged 55 to 74. Females (n=2) between the age of 55-74 represented the lowest number of participants, with males (n=4) between the age of 18 to 24 and females (n=4) between the age of 55 to 74 represented the second lowest number of participants.

#### 4.2.2. Credit Card Users and Those Who Are Aware of Reward Features.

**Table 3**

*Participant's Information on Use of Credit Card and Rewards Provided by Bank*

N = 88

<b>Variables</b>	<b>Low Rewards No. (%)</b>	<b>High Rewards No. (%)</b>	<b>Total participants No. (%)</b>
<b>Have you ever had a credit card in the past?</b>			
Yes	37 (84.1)	39 (88.6)	<b>76 (86.4)</b>
No	6 (13.6)	5 (11.4)	<b>11 (12.5)</b>
Unsure	1 (2.3)	0	<b>1 (1.1)</b>
<b>Does your bank offer any rewards or benefits as a part of its features?</b>			
Yes	30 (68.2)	34 (77.3)	<b>64 (72.7)</b>
No	7 (15.9)	8 (18.2)	<b>15 (17.0)</b>
Unsure	7 (15.9)	2 (4.5)	<b>9 (10.2)</b>

Table 3 shows 86.4% of participants had credit cards, whereas 12.5% had never used a credit card before. A small percentage of participants (1.1%) were unsure if they have ever used a credit card. Almost a third of participants (72.7%) said their bank provides them rewards as a feature on credit cards, while 17% said their bank does not offer them any rewards as a feature on credit cards. Moreover, 10.2% were unaware whether their banks offered any rewards as a feature, implying that they are uninterested in the reward system. It would be intriguing to discover if this 17% of participants prefer to get rewards from their bank.

**Figure 3**

*How Many Participants Were Aware of Their Reward Credit Cards?*

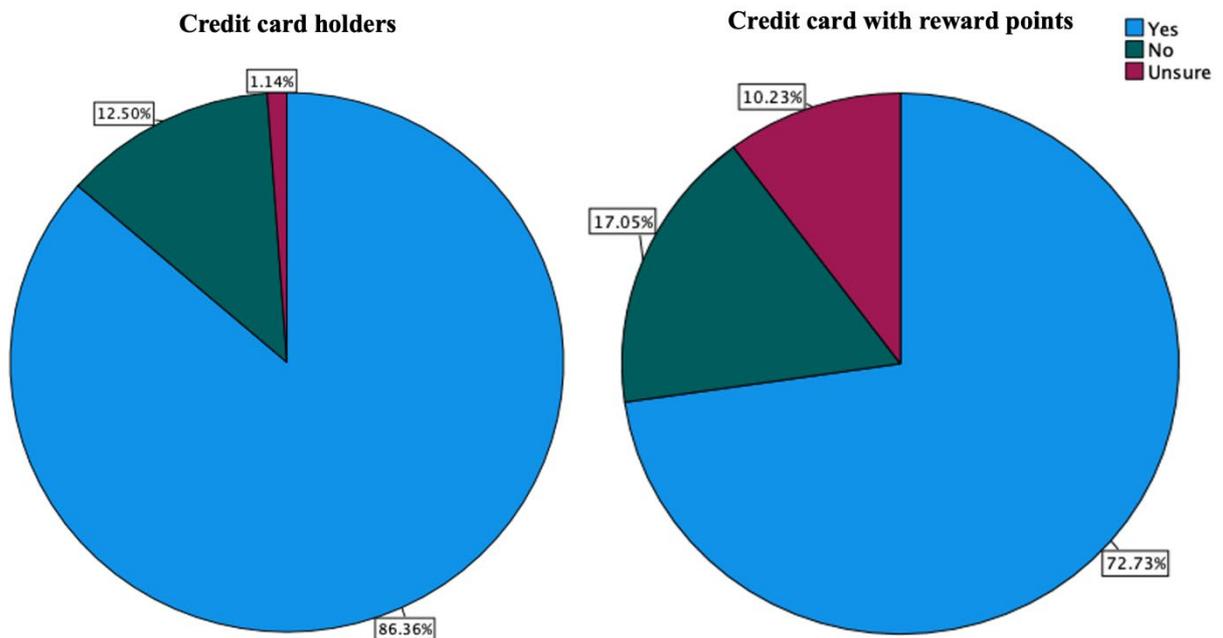


Figure 3 represents the number of participants who hold credit cards and the proportion that have reward points features. When asked if the participants had any kind of credit cards, 86.36% responded with “Yes”; when asked if the credit card they had included reward points features, a staggering 72.73% responded “Yes” indicating that the majority of the participants were aware of their reward features.

Those participants that responded “No” to having a credit card with reward points made up 17.05%. Participants that responded they were “Unsure” if they had a credit card at all represented slightly more than 1%. While those who responded they were “Unsure” about having a credit card with reward points represented somewhat more than 10%. Analysis indicates some participants use credit cards but are unaware of the reward benefits offered on their credit cards.

### 4.2.3. Rewards Desirability

Rewards are one way to engage bank customers, and in return gain or lose their satisfaction and intention towards credit card usage. As a result, descriptive analysis assisted to determine how a participant reacts to rewards in various ways in both scenarios (high and low gamification groups) and who preferred different reward types from the most desirable to undesirable.

**Table 4**

*Participants' Perceptions of Preferred Reward Types*

N=88

<b>Variables</b>	<b>Reward Groups</b>	<b>Undesirable No. (%)</b>	<b>Somewhat undesirable No. (%)</b>	<b>Somewhat desirable No. (%)</b>	<b>Desirable No. (%)</b>
<b>Gift vouchers</b>	Low	7 (15.9)	6 (13.6)	14 (31.8)	17 (38.6)
	High	0	5 (11.4)	18 (40.9)	21 (47.7)
	<b>Total</b>	<b>7 (8.0)</b>	<b>11 (12.5)</b>	<b>32 (36.4)</b>	<b>38 (43.2)</b>
<b>Financial Points</b>	Low	6 (13.6)	10 (22.7)	21 (47.7)	7 (15.9)
	High	2 (4.5)	2 (4.5)	15 (34.1)	25 (56.8)
	<b>Total</b>	<b>8 (9.1)</b>	<b>12 (13.6)</b>	<b>36 (40.9)</b>	<b>32 (36.4)</b>
<b>Discounts</b>	Low	7 (15.9)	6 (13.6)	13 (29.5)	18 (40.9)
	High	2 (4.5)	4 (9.1)	11 (25)	27 (61.4)
	<b>Total</b>	<b>9 (10.2)</b>	<b>10 (11.4)</b>	<b>24 (27.3)</b>	<b>45 (51.1)</b>
<b>Cashback</b>	Low	1 (2.3)	2 (4.4)	16 (36.4)	25 (56.8)
	High	0	1 (2.3)	14 (31.8)	29 (65.9)
	<b>Total</b>	<b>1 (1.1)</b>	<b>3 (3.4)</b>	<b>30 (34.1)</b>	<b>54 (61.4)</b>

Table 4 shows that cashback was the most desirable reward for three-fifths of the participants (61.4%), while financial points were the least desirable reward for more than a

quarter of the participants (36.4%). According to Table 4, focusing on the most desirable gamification element when integrating into credit cards appears to be quite beneficial to the bank. Table 4 also demonstrates that credit cardholders dislike “Financial Points” (36.4%) in credit cards and prefer “Cashback” (61.4%), followed by “Discounts” (51%) at restaurants and shopping, and, finally, “Gift Vouchers” (43.2%) as rewards for using the bank's products and services.

#### Figure 4

##### *A Comparison of Desirability of Different Reward Types*

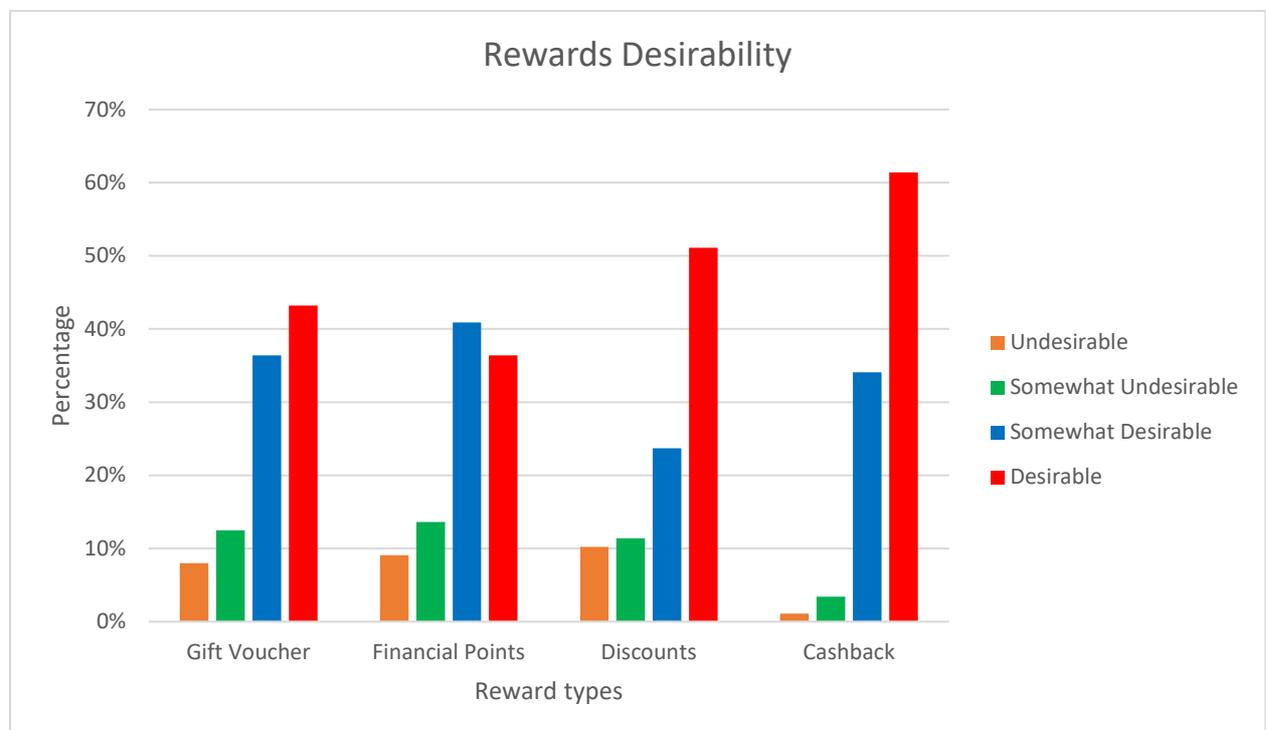


Figure 4 compares the percentage of participants desirables of four reward types from the most to the least. It can be seen the cashback has the highest percentage of desirability (61.4%) of the four rewards. In contrast, financial points has the lowest percentage of desirability, with 36.4%. The participants who found cashback less desirable was only 1.1%, whereas discount was the most undesirable reward type with little over 10%. Interestingly, discount was also the second most desirable reward type after cashback (61.4%) by the credit cardholders. Financial points and gift vouchers were both similar 35% to 45% respectively.

The undesirable percentages for cashback compared to the other three reward types were substantially different, (1.1%).

#### 4.3. Correlation Analysis

The correlation between the dependent and independent variables was determined using Karl Pearson's coefficient. The correlation was used to characterise the relationship between two variables in terms of both the strength and direction of the relationship. The guidelines in Table 5 were used to assess the correlations between variables.

**Table 5**

*Guideline for Interpreting the Size of a Correlation Coefficient*

<b>Coefficient Range</b>	<b>Strength of Association</b>
0.90 to 1.00 (-0.90 to -1.00)	Very high positive (negative) correlation
0.70 to 0.90 (-0.70 to -0.90)	High positive (negative) correlation
0.50 to 0.70 (-0.50 to -0.70)	Moderate positive (negative) correlation
0.30 to 0.50 (-0.30 to -0.50)	Low positive (negative) correlation
0.0 to 0.30 (0.00 to -0.30)	Negligible Correlation

*Note.* From “Malawi Medical Journal” by M. M. Mukaka, 2012, A guide to appropriate use of Correlation coefficient in research, 23(3), p. 69-71

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**Table 6***Pearson Correlation Matrix of Combined (Low and High) Gamification Groups*

N= 88

Correlations		Gamification	Engagement	Satisfaction	Intention
Gamification	Pearson Correlation	1			
	Sig.				
Engagement	Pearson Correlation	0.619**	1		
	Sig.	0.000			
Satisfaction	Pearson Correlation	0.812**	0.737**	1	
	Sig.	0.000	0.000		
Intention	Pearson Correlation	0.766**	0.679**	0.805**	1
	Sig.	0.000	0.000	0.000	

\*\*Correlation is significant at the 0.01 level (2-tailed).

Table 6 represents the significant correlations for this research, which is composed of independent variable (credit card gamification) and dependent variables (engagement, satisfaction, and intention). Most values stand out such as correlation between gamification and engagement ( $r = 0.619$ ,  $N = 88$ ), gamification and satisfaction ( $r = 0.812$ ,  $N = 88$ ), and gamification and intention ( $r = 0.766$ ,  $N = 88$ ). All these correlations showed values above 0.500, indicating a moderate to high correlation.

The results are followed by the correlation between engagement and satisfaction is highly positive with a correlation coefficient of  $r = 0.737$ ,  $N = 88$ , which is between 0.70 to 0.90. (refer to Table 5) and  $r = 0.679$ ,  $N = 88$  which is between 0.50 and 0.70 (refer to Table

5), indicating the correlation between engagement and intention is moderately positive. The correlation between satisfaction and intention is shown to be highly positive, with a correlation coefficient of  $r = 0.805$ ,  $N = 88$  between the two variables, which is between 0.70 to 0.90 (refer to Table 5). It is worth noting that this test demonstrates a linear correlation.

#### **4.3.1. The Linear Relationship Between the Gamification with Engagement, Satisfaction, and Intention.**

The correlation of gamification and its dependent variables were calculated and shown in Figures 5, 6, and 7. They were used to identify through a scatterplot the relationship between the independent variable and the outcomes (engagement, satisfaction, and intention). Correlation analysis was used to quantify the degree to which of the three variables were often related to gamification. Figure 5 determines which of the three variables banks are focusing on as a result of the participant's responses and illustrates the relationship between engagement (y-axis) and gamification (x-axis) of credit card users.

**Figure 5**

*Scatter plot of Customer Engagement on Credit Card Usage*

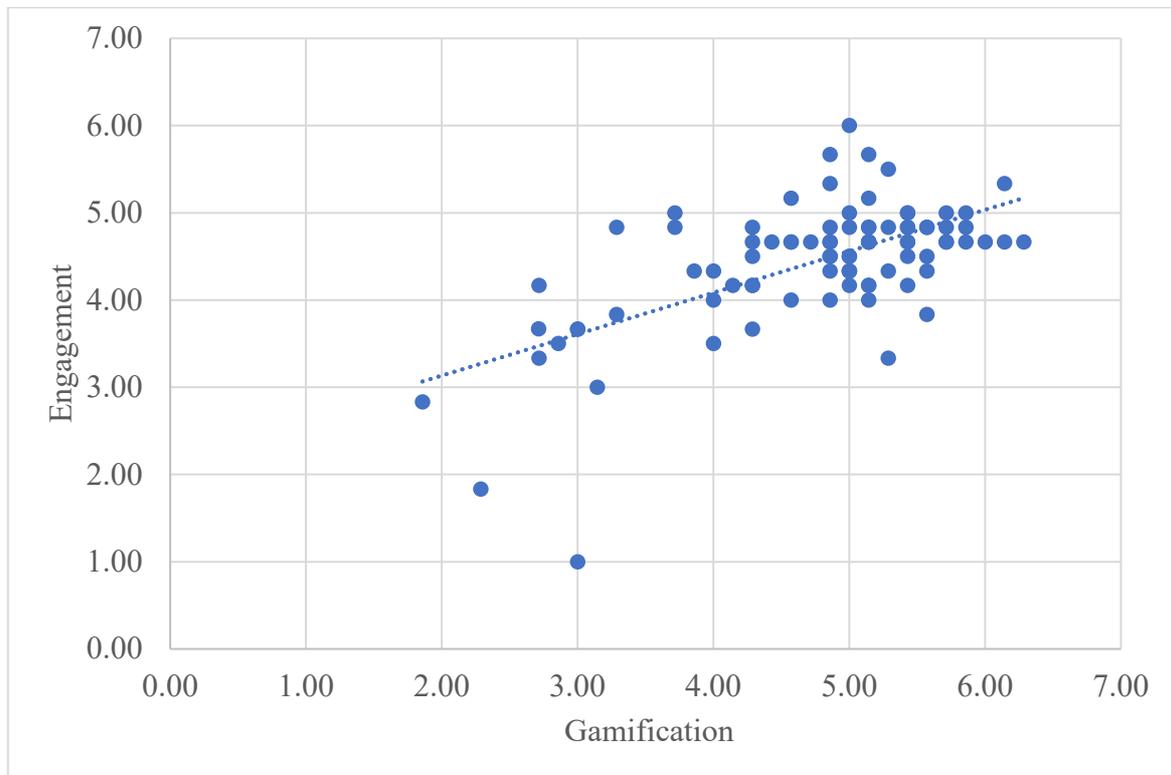


Figure 5 shows plots in an uptrend pattern along the line getting closer indicates that there is a positive, linear relationship of moderate strength ( $r = 0.619$ ,  $p = 0.00$ ) between engagement and gamification. As the gamification increases, the engagement of the participant increases, which shows a change in gamification patterns is responsible for a change in engagement behaviour. In addition, considering the objective of investigating the effects of gamification on credit card users, it was found that all of the values presented in Table 6 are significant, implying that there is a moderate positive correlation between gamification and engagement of the credit card users, as their correlation coefficient ( $r$ ) = 0.619, which is between 0.5 and 0.70 (refer to Table 5).

**Figure 6**

*Scatter plot of Participant Satisfaction on Credit Card Usage*

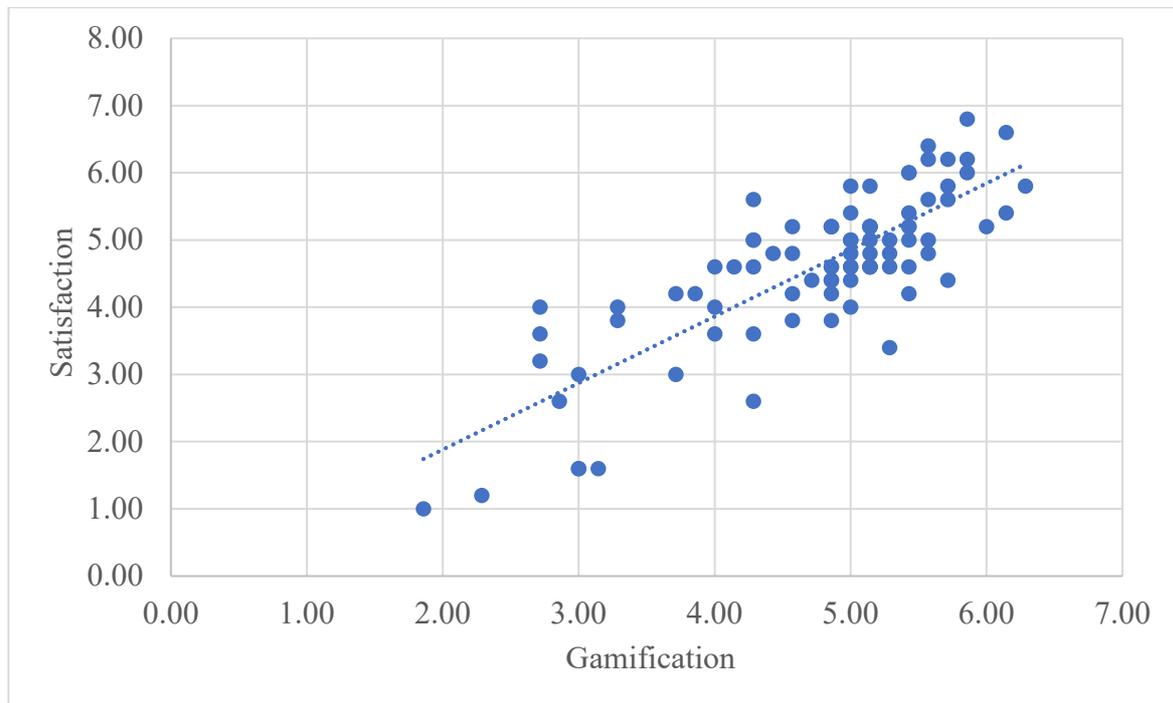


Figure 6 demonstrates that two variables have a positive linear relationship of high strength ( $r = 0.812$ ,  $p = 0.00$ ) between satisfaction and gamification. As can be observed that the above-average satisfaction values have accompanied above-average gamification values, while below-average values are also occurring simultaneously. This means as gamification increases, the satisfaction gets closer forming a linear relationship. The correlation between gamification and satisfaction was discovered to be positively high, with a correlation coefficient of  $r = 0.812$ , which falls between 0.70 to 0.90 (refer to Table 5). However, very few participants are scattered towards X-axis; therefore, for some participants, it does not necessarily mean that if credit card users collect reward points that they were satisfied. Overall, it shows the effects of gamification are highly correlated with the satisfaction behaviour of customers.

**Figure 7**

*Scatter plot of Participant Intention on Credit Card Usage*

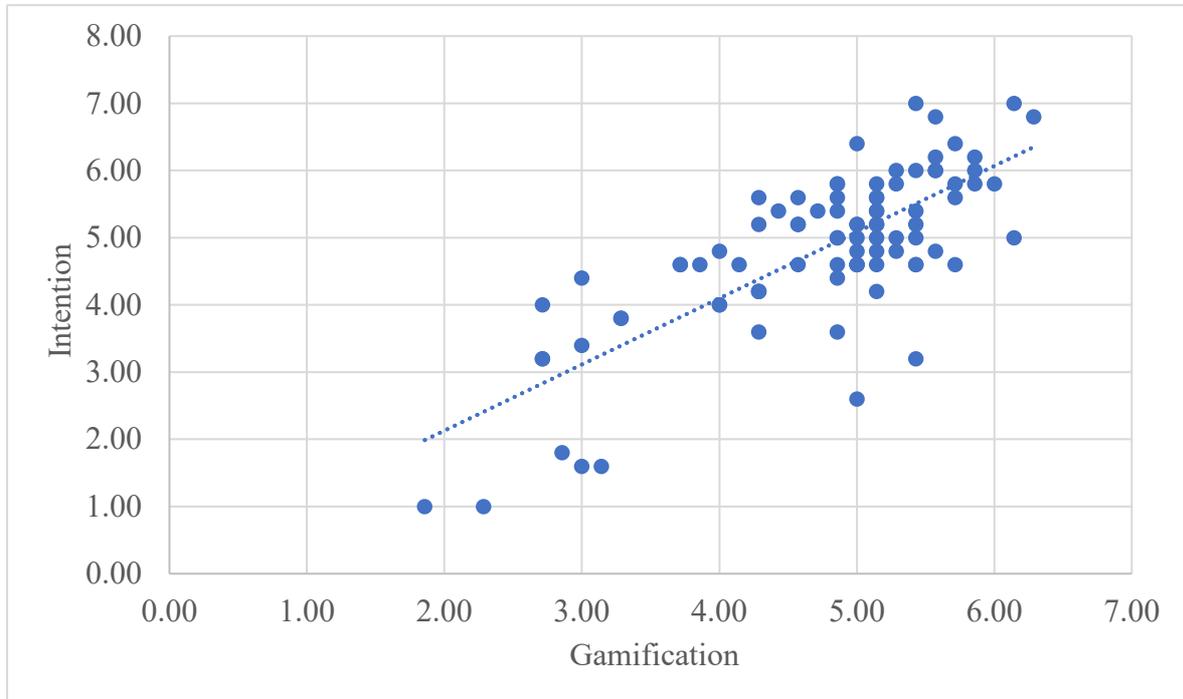


Figure 6 demonstrates the correlation between intention and gamification. Table 6 displays a positive linear relationship of high strength with a value of ( $r = 0.766$ ,  $p = 0.00$ ) between intention and gamification, which means that the points on the scatterplot closely assemble a straight line. The relationship is linear because the intention is increasing approximately by the same rate as the gamification, at a 45-degree angle. The correlation between gamification and intention was likewise found to be positive, with a value of  $r = 0.766$ , which is between 0.70 and 0.90 (refer to Table 5). Figure 7 provide further support for research that gamification influences customer intention to use a credit card and redeem rewards.

#### 4.4. T-test Analysis

T-test analysis consisted of a comparison of mean differences between high and low gamification groups, and an independent sample t-test that analysed the significance between the independent and dependent variables. From this analysis, determined whether high reward points value affects the behaviour of credit card users.

##### 4.4.1. Comparison of Means

**Table 7**

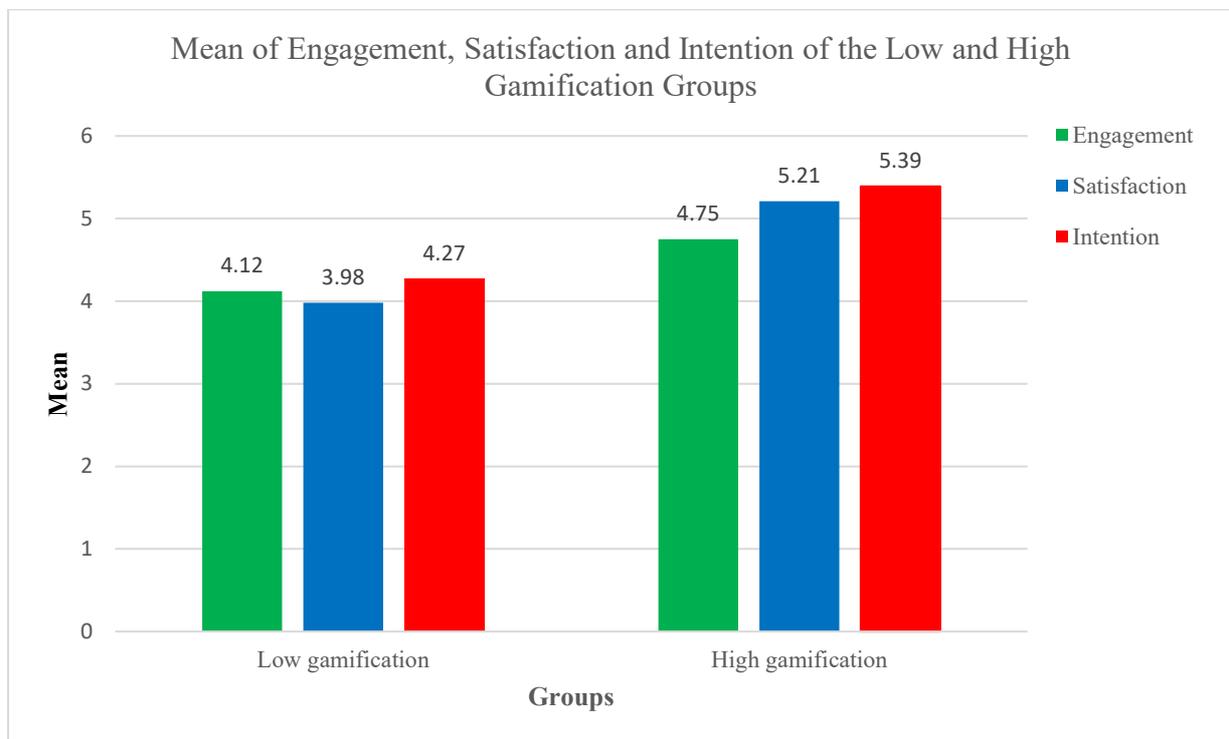
*Comparison of Mean Score between Low and High Gamification Groups*

N = 88

<b>Variables</b>	<b>Gamification groups</b>	<b>Mean (M)</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
Engagement	Low	4.1212	0.80884	0.12194
	High	4.7500	0.47072	0.07096
Satisfaction	Low	3.9818	1.18504	0.17865
	High	5.2091	0.74203	0.11187
Intention	Low	4.2682	1.23811	0.18665
	High	5.3864	0.92651	0.13968

**Figure 8**

*Mean of Engagement, Satisfaction and Intention of the Low and High Gamification Groups*



With the information of which variables differ in the average of low and high gamification participants, it remains to be identified which has the highest average, i.e., which rewards provided the best outcomes according to the participants. Table 7 suggests these findings by displaying the average of each variable for low and high gamification. That is, for participants who were given a high reward (1 point = \$20) and a low reward (1 point = \$5) to the same question. Table 7 shows that participants who were given high reward points scored higher on all three factors (engagement, satisfaction, and intention) than those who were given low reward points.

This group chart signifies a comparison of mean between two gamified groups, a low and high gamification group of customer engagement, satisfaction, and intention behavior. It can be visibly seen in the rise of the number of mean scores of intentions in both gamification groups (low and high) with the differences of 1.12 mean score where the satisfaction is the next leading variable with a 5.21 mean score in the high gamification group whereas with a

3.98 mean score in another group. On the contrary, in the low group of gamification, engagement reaches the third element with the mean difference of 0.63 between the two gamified groups with mean scores (4.75 and 4.12), respectively. As a result, if the value of credit card reward points is increased, the graph above indicates that behavior in reward point collectors can be noticed, implying that gamification is influencing bank customers' credit card usage behaviour.

#### 4.4.2. Independent Sample T-test

**Table 8**

*Independent t-test Sample of Low and High Groups based on Engagement, Satisfaction, and Intention of Credit Card Users.*

N=88

		Levene's Test for Equality of Variances		T-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
<b>Customer Engagement</b> <b>(Dependent Variable)</b>	Equal variances assumed	5.449	0.022	-4.457	86	0.000	-.62879	0.14108	-.90925	-.34832
	Equal variances not assumed			-4.457	69.130	0.000	-.62879	0.14108	-.91023	-.34734
<b>Customer Satisfaction</b> <b>(Dependent Variable)</b>	Equal variances assumed	5.885	0.017	-5.822	86	0.000	-1.22727	0.21078	-1.64630	-.80825
	Equal variances not assumed			-5.822	72.226	0.000	-1.22727	0.21078	-1.64744	-.80710
<b>Customer Intention</b> <b>(Dependent Variable)</b>	Equal variances assumed	1.647	0.203	-4.796	86	0.000	-1.11818	0.23313	-1.58162	-.65474
	Equal variances not assumed			-4.796	79.662	0.000	-1.11818	0.23313	-1.58215	-.65421

The Independent Sample T-test was used to confirm a statistically significant difference between the low and high gamification group outcomes. Table 8 shows whether there is statistical significance in the differences in means when the value of Sig. (2-tailed) is less than or equal to 0.05 for the relationship between gamification and engagement, gamification and satisfaction, and gamification and intention.

### **Engagement**

The high gamification group (N = 44) was associated with an engagement M = 4.75 (SD = 0.70). By comparison, the low gamification group (N = 44) was associated with a numerically smaller engagement M = 4.12 (SD = 0.80). To test the hypothesis that low and high gamification was associated with statistically significant different mean engagement, an independent sample t-test was performed. The assumption of homogeneity of variances was further tested and found to be proven via Levene's F test,  $F(86) = 5.44$ ,  $p = 0.022$ . The independent sample t-test was associated with a statistically significant effect,  $t(34) = -4.4$ ,  $p = 0.000$ . Thus, the high gamification was associated with a statistically significantly greater mean engagement than the low gamification group. As a result, H1 (Gamification affects customer engagement) was supported.

### **Satisfaction**

An independent sample t-test was conducted to compare the customer satisfaction mean between two groups, low (N = 44) and high gamification (N = 44) participants. There is significant difference ( $t(df) = 86$ ,  $p = 0.000$ ) in scores for high gamification M = 5.20 (SD = 0.74) and low gamification M = 3.98 (SD = 1.18). The magnitude of the differences in the means (mean difference = -1.22), 95% CI (-1.64 to -0.808), moreover homogeneity estimates

showed a significant and substantial amount for satisfaction outcomes via Levene's F test,  $F(86) = 5.88$ ,  $p = 0.017$ . Hence, H2 (Gamification affects customer satisfaction) was supported.

### **Intention**

The data obtained by considering H3 "Gamification affects customer intention" was analyzed using an independent sample T-test. The significance differences were observed between two groups, high gamification ( $N = 44$ ) and low gamification ( $N = 44$ ) in terms of intention variable were  $t(df) = 86$ ,  $p = 0.000$ , mean difference = -1.11, 95% CI (-1.58 to -0.654). Although, as seen in Table 7, the intention mean score of the high gamification group  $M = 5.38$  ( $SD = 0.92$ ) was higher than that of the low gamification group  $M = 4.26$  ( $SD = 1.23$ ) the results of Levene's F test, ( $F(86) = 1.64$ ,  $p = 0.203$ ) revealed that the differences between the mean of two gamification group don't seem to influence intention. The mean values revealed among all variables are absolute differences, but as stated in Table 8, intention did not reach the significant level as determined by t-test analysis. Thus, H3 (Gamification affects customer intention) was not supported.

### **4.5. Testing of the Hypotheses**

To make a reliable and valid inference, this research tested each hypothesis to detect the direction of the meaningful relationship between the dependent and independent variables. The main reason that led to this research was to explore the effectiveness of gamification elements on credit card users' engagement, satisfaction, and intention. The conceptual framework of gamification was developed based on the previous literature. The research was conducted to address the following hypotheses based on the effectiveness of gamification in the form of reward points.

### Assessing Hypothesis 1 (H1)

**Gamification affects customer engagement in the banking industry.** In comparing the level of engagement perceived by the participants in the low and high gamification groups the results indicated a significant positive moderate correlation with gamification (0.619 units).

- Positively correlation with satisfaction and intention both in the analysis of the results of low and high gamification group participants.
- A significantly higher mean average for high gamification group participants than for low gamification group participants.
- Was found to be one factor that affects gamification in the analysis of the independent t-test.

### Assessing Hypothesis 2 (H2)

**Gamification affects customer satisfaction in the banking industry.** This research was conducted to analyse the hypothesis of gamification being more likely to generate customer satisfaction. Such outcome entered the research only after the hypothesis was formulated and because of this factor that makes up the satisfaction scale. For this analysis, the following findings on customer satisfaction were gathered:

- Gamification correlated highly positive with satisfaction.
- In the correlation analysis to see the direct effects of gamification, satisfaction was the most effective variable compared to engagement and intention.
- Correlation analysis also confirms that when satisfaction increases, the engagement and intention decrease in credit card users.
- The analysis led to a strong correlation between satisfaction and intention in both low and high gamification.

### Assessing Hypothesis 3 (H3)

**Gamification affects customer intention in the banking industry.** To examine the comparison of customer intention between the low and high gamification participant groups, the following findings were gathered:

- Correlated positively with gamification.
- The correlation analysis for both gamification groups correlated positively with engagement and satisfaction.
- Presented a higher average in the high gamification group than in the low gamification in the comparison of means.
- In the independent sample t-test analysis, Levene's test for equality of homogeneity variance of the high and low gamification group was not significant ( $p = 0.203$ ), failing to reject the null hypothesis ( $H_0$ ).

## **Chapter 5**

### **Discussion, Limitation, Recommendation, and Conclusion**

This chapter deals with discussion, limitation, recommendations, conclusion, and dissemination of the research. The discussion part presents all the findings of the research, and the findings are compared with those of previous studies. The recommendation section provides suggestions to future studies for improvement of the present research and proposes a solution to the investigation's problem. The conclusion is drawn from each of the findings of the research which will be discussed further down below.

#### **5.1 Discussion**

As previously discuss the adoption of the conceptual framework was used as the basis to analyse how the use of reward points in gamification influences customer credit card purchasing behaviour. The findings suggest that reward points in credit cards were identified as an important indicator in banking gamification because, the researcher tested by applying high and low reward points in credit card spending, and the results showed that the rise in the mean score, indicating that more reward points were identified as an important factor in motivating credit card users. Different types of rewards allow customers to demonstrate purchase behaviour. According to the findings the most significant aspect in gamification impacting customer satisfaction is fun, and the most important factor motivating the customer to use a credit card to make frequent purchases is the reward. Out of the three variables satisfaction was found to be the most influencing factor affected by gamification in the banking industry.

This research aimed to investigate the effects of gamification on engagement, satisfaction, and intention of credit card users. Multiple analyses were undertaken to better understand gamification in banking, both demographically and behaviourally. Participant

demographic data and preference towards credit card usage were analysed using descriptive analysis and were crucial in determining the participants' age and gender. Correlation analysis was performed to assess the strength of the relationship between gamification, engagement, satisfaction, and intention, and lastly, t-test analysis was adopted to compare the means of low and high groups to assess whether they were different to a statistically significant extent.

### **5.1.1. Descriptive Analysis**

This section summarises the findings of the low and high gamification groups and explores the similarities and differences observed from the descriptive analysis. According to the demographics data mentioned in Table 2, 55.7% of the participants who used gamified credit cards were female. This corresponds with La Magna's (2018) findings that women hold more credit cards on average than men. Secondly, the majority of the participants (45.5%) were between the ages of 25 and 34; this finding partially matches with Ludviga and Ergle's (2018) findings, which revealed that the younger generation responds better to the usage of gamification in terms of satisfaction. According to the findings, the age group of 25 to 35 appears to be important for gamification in the banking industry to generate engagement, satisfaction, and intention.

The total number of participants who responded they have credit cards was 86.4%, with 72.2% (refer to Table 3) indicating that their credit cards contain various forms of rewards as features. However, 10.2% of the participants were unaware that their credit cards offered any sort of rewards programme. Even though the Reserve Bank of New Zealand (RBNZ) believes that there are over 2.7 million credit cardholders in New Zealand (Scoop, 2020), it was unable to determine how many of these credit cards offered reward points. As a result, no data for credit cards with reward points were available in New Zealand that could be compared to the data

presented in this research. Similarly, according to the findings, cashback (61.4%) was the most desirable credit card reward programme (refer to Figure 4); when this finding was compared to the Angelina et al., (2019) study, the result indicates that customers are more interested in gamification systems in the form of reward points when conducting financial transactions through internet banking (apps and websites). However, that study investigated the effects of gamification on internet banking rather than credit cards. The focus of this research was credit cards, and reward points in gamification, and it was discovered that cashback was the most desirable reward element in gamification. The previous study included 192 bank customers, but it did not reveal how many of them preferred reward points in gamification. Therefore, the cashback findings were compared to a questionnaire conducted by a credit card company (Johnson, 2021), which discovered that 56% of bank customers redeemed cashback rewards compared to only 15% who redeemed other types of rewards. The same study reported cashback was the most popular rewards programme among credit card holders since it does not have an annual fee and is typically a less complicated rewards programme to navigate. Another study by George (2021) indicates that 79% of customers seek various types of reward programmes when applying for a credit card. Hence, making the customer feel good about their purchases is imperative not just for a good customer experience but also for bank loyalty (Yaiser and Karpinski, 2021).

Finally, as per descriptive analysis findings, participants prefer more cashback as a reward. Participants frequently use credit cards to accumulate cashback. This refers to the influence of reward points on credit card purchase behaviour. However, while cashback appears to be immensely popular among bank customers, it is also advantageous to banks indirectly. Customers will use their credit cards more frequently at various merchants to earn more

cashback rewards. On the other hand, banks make a profit from this customer-merchant transaction because merchants who accept various card payments pay fees to banks. This is confirmed by data from the New Zealand Government (2020), revealing that businesses pay an average of \$13,000 or more per year in merchant service fees to banks.

### **5.1.2. Correlation Analysis**

A correlation analysis was performed to determine if gamification was positively correlated to the three variables. According to the analysis, gamification was moderately correlated with engagement ( $r = 0.619$ ) and highly correlated with both satisfaction ( $r = 0.812$ ) and intention ( $r = 0.766$ ). Even though the three variables had a higher response rate, satisfaction and intention were relatively higher than the engagement variable. These findings support when viewed through the context of bank gamification. All customers who received rewards were more engaged in credit card purchasing behaviour, which supports the findings of Hall (2021), who surveyed 200 credit card holders to learn their perspectives on utilising rewards currency such as cash to pay for purchases made with their credit card. If given the option, a staggering 71% of participants stated they would be "likely" or "extremely likely" to use rewards as actual cash with stores or e-commerce platforms. This indicates that when comparing the effectiveness of bank gamification in participants, the more reward points on credit cards, the more the customer is attracted. Moreover, discounts, financial points, and gift vouchers provided no instant gratification; customers are unsure when it will pay off, but if the reward type is cashback, it provides immediate satisfaction (Nisa, 2021). However, the correlation analysis also indicated that engagement declines when customers were satisfied with the redeemed purchases bought using credit card points. One possible reason for this difference is that after achieving their goal of accumulating credit card points and redeeming them for goods and services,

customers may lose interest in collecting points for a period of time, resulting in a decline in engagement (Chen et al., 2021). In the same way, as satisfaction increases, so does the likelihood of purchase intention. The reason for the preceding sentence is that when a customer collects credit card points, they have a strong desire to spend the points to exchange products and services instantly (Agrawal et al., 2018).

### **5.1.3. T-test results**

The research was divided into two groups, one with low gamification (Scenario B) and the other with high gamification (Scenario A), to see if the outcomes in terms of engagement, satisfaction, and intention changed when high reward points (1 point=\$20 – Scenario A) and low reward points (1 point=\$5 – Scenario B) were offered. The results revealed a higher mean value for engagement (M = 4.75), satisfaction (M = 5.2), and intention (M = 5.3) when compared to the results of the low gamification group. This finding suggest that the higher reward points applied in the high gamification group, the more positively participants reacted to the opportunity to earn additional reward points. This indicates the reward programme works and motivates customers to achieve benefits from spending with a credit card. These findings are consistent with previous research from a comparable questionnaire, which reported that 58% of rewards cardholders were extremely satisfied with their credit cards, compared to only 46% of non-reward credit cardholders (Turner, 2012). The same research revealed that reward cards increase sales by 80% of card-accepting businesses, implying that reward points influence the purchasing behaviour of credit card customers.

Lastly, although the three variables' mean value was higher, the significant result in intention was greater than p-value (0.05), indicating that no effect between gamification and intention was observed, confirming the H3 of intention is false and should be rejected. This may

be due to the smaller sample size and it is assumed that if the sample size had been larger, the results might have supported H3. Although this result did not support H3 of this research, it was not unexpected given prior research by Yan et al., (2020), who examined the impact of gamification on purchase intention, according to which it would be impossible to attract customers only by adding reward points through game elements without also considering how to meet the basic physiological needs of customers. Furthermore, the t-test analysis was utilised to examine the three hypotheses, and the findings are presented in Table 9.

**Table 9**

*Summary of Hypotheses t-test Results*

<b>Hypotheses</b>	<b>Significance</b>	<b>Result</b>	<b>Explanation</b>
H1: Gamification affects customer engagement in the banking industry.	0.022	Accepted	The p-value is 0.022 which is less than 0.05. This shows that gamification is significant with engagement.
H2: Gamification affects customer satisfaction in the banking industry.	0.017	Accepted	The p-value is 0.017 which is less than 0.05. this indicates that gamification is significant with satisfaction.
H3: Gamification affects customer intention in the banking industry.	0.203	Rejected	The p-value is 0.203 which is more than 0.05. This indicates that gamification is not significant with intention.

Overall, the t-test contributed to the investigation of H1 and confirmed that gamification affects customer engagement in banking. The t-test analysis showed gamification had significant effects on gaining satisfaction, implying that the reward value is a strong indicator in credit card spending. The analysis suggests that gamification does not affect customer intention. Hence, it

was concluded that even though reward points could be useful for credit cardholders with low motivation, when linked to a scenario where the customer already has an inherent interest, it does not increase intrinsic motivation. Kim (2020) advised that bank customers need to avoid unconditional belief in reward points in gamification. Since most of the participants were already credit card users, reward points might not have been a critical factor for intention. Overall, satisfaction was proven to be an effective variable by gamification in analyses (descriptive, correlation, and t-test). As a result, it was concluded that gamification had the highest impact on satisfaction, but it did not have any effect on customer intention.

#### **5.1.4. Summary**

All the data was collected and analysed in New Zealand, and it was carried out through an online questionnaire via Qualtrics. Among the participants (N = 88), approximately one third stated they had participated in reward points programme with their banks; among them, cashback was found to be the most desirable reward by three-fifths of the participants. In contrast, one-fourth of participants stated that they had never participated in a reward points programme.

T-test analyses were utilised to investigate the hypotheses presented in Chapter 3. For demographic data, descriptive analysis was performed, and it was later used in the crosstabulation. After finding the relationship between the dependent and independent variables by correlation analysis, the linear analysis was performed, followed by the t-test analysis, which included the comparison of means. Following data analysis, the findings were compared with the literature, which contributed to drawing conclusions.

The findings revealed a change in participant behaviour in both the low and high gamification groups, with a significant difference while using credit cards with high reward points. Among three variables, intention was the only variable that did not show a positive effect

in either of the low or high gamification groups, indicating that H3 was not supported.

Engagement and satisfaction were confirmed to have positive effects in both the low and high gamification groups. Gamification was discovered to be completely dependent on demographic factors such as age and gender.

## **5.2. Limitations**

One of the main limitations was that gamification is relatively a new concept, which is not properly defined in the literature. Explaining gamification with the use of credit cards was even more challenging to participants, who frequently responded that they had never heard of the word gamification. This revelation came about when many bank colleagues did not even know what gamification was, despite having used gamified products or services. A brief explanation of the concept before the questionnaire was insufficient to avoid this limitation.

The second limitation, which builds on the previous one, is that the sample size was small. Potential participants were not interested because they were unfamiliar with the concept of gamification. Some potential participants contacted the researcher and inquired what gamification was, and after explaining the concept, some did participate. However, some potential participants did not respond, even after being followed up to check whether they had completed the questionnaire. Hence, the results of the participants (N=88) cannot be generalised to the whole population of credit card users in New Zealand.

The third limitation was H3, "Gamification affects customer intention," was rejected. When the researcher examined the means of the three variables, the mean of "intention" appeared to be higher; however, when the "intention" was tested in t-test analysis, it revealed that gamification had no effect on customer intention, rejecting H3. As a consequence, future

research might focus on this hypothesis by increasing the number of participants to examine if a large sample size results in different findings.

The researcher believes that once the concept of gamification becomes more popular and is universally recognised, it will lead to researchers paying more attention to gamification, especially in the context of credit card usage. In the future, it is envisaged that more customers will become aware of the gamification concept, which would make it easier to recruit more participants.

### **5.3. Recommendation**

This research was completed entirely using a quantitative methodology. Therefore, future research should take this into consideration and use a mixed-method approach. Consideration should be given to including initially interviewing bank executives to gain comprehensive knowledge of the gamification phenomena from the bank's perspective and understand how banks are using gamification in today's marketplace. Secondly, based on the results of the interviews, creating a questionnaire for bank customers. Finally, comparing the outcomes through a side-by-side discussion to evaluate if bank customers are following the same gamification path as the banks.

To enable a more conclusive investigation of the relationship between gamification and bank customers, more high-quality research conducting a field experiment with extended controls groups with previous knowledge of gamification impacts is needed to achieve a higher level of validity. This may be accomplished by providing a gamification environment in which bank customers can participate in an activity that will benefit future research. The outcomes may

then be observed in real-time to see if gamification has an effect on certain variables like behaviour or performance.

There are many ways of implementing gamification in banking, and this research focused on one of them: reward points, which had the ability to influence credit card users by incentivising their motivation. As a result, in the future context of gamification studies, researchers might consider investigating various gamification elements or components (apart from monetary reward) employed by the bank industry. Future gamification research should focus on specific gamification elements rather than an overall concept, allowing the effectiveness of various elements to be determined. Banks can better identify which gamification element is most effective in promoting credit card usage by segregating specific game mechanics and measuring their performance.

Regardless of whether a bank or organisation is attempting to gamify, it is extremely important that they adopt a long-term approach to the process (Jefferies, 2017). It is important for banks to think differently about how they provide value to the customers. A bank should consider factors like easing customer stress, communicating availability, offering more options for convenience, and putting money back onto the customer's credit card when they need it most. Appealing to customer sensibility, especially after the COVID-19 pandemic has never been so impactful, and more than any other type of reward, its cashback ensures a strong finish to customer satisfaction.

#### **5.4. Conclusion**

This research analysed the effects of gamification on bank customers depending on their credit card usage behaviour. More specifically, it investigated the effects of reward points in

engagement, satisfaction, and intention based on the participants response to the questionnaire. To achieve this goal, this research conducted a questionnaire with 88 participants where a scenario was presented with high reward value (scenario A) and low reward value (scenario B). The researcher identified a gap in the literature in this area because many studies focused on gamification outcomes, but few examined the impact of gamification elements integrated with credit cards that can influence bank customers to use credit cards more frequently than intended. This research closes a gap in the literature by comparing low reward points with high reward points while also determining the relationship between gamification and engagement, satisfaction, and intention.

A conceptual model that served as the foundation for this research, which thoroughly studied the concept of gamification, the current use of gamification in the bank industry and other businesses, its elements and mechanisms that is comprised of, and the outcomes gamification brings to bank customers.

Banks and financial institutions can rely on the findings of this research when deciding whether or not to use gamification with various products and services since the effects can be expected. In addition to preparing what outcomes to expect from gamification integration, banks can recognise which gamification elements are most valuable for their industry. However, the rejection of H3 (Gamification affects intention) implies that the banking industry should not focus only on financial reward points to influence purchasing behaviour since there are various gamification components and elements that can be implemented into banking goods and services. Additionally, the results of this research show that gamification helped to improve customer engagement and satisfaction, but it had no effect on customer intention, which should be considered. This means providing high reward points in credit cards by banks might bring

about changes in customer engagement, therefore, making them satisfied, but it does not change the intention directing the customer decision or action towards a particular purchasing activity using their credit card.

It is hoped that this research will provide an understanding into the effect of gamification mechanisms on behaviour of bank customers using credit cards.

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## Appendix A

### Ethics Approval



For assistance with filling out this form, please contact

- Your Research Supervisor/Facilitator (Students) OR
- OPAIC Ethics Coordinator (Dr. Indrapriya Kularatne).

**Notes:**

- Please ensure your application is written in language that will be understood by a layperson with no expert knowledge in your field.
- Please use the OPAIC Research Guidelines when preparing your application. Explanations of terms such as potential harm, underage, vulnerable participants, anonymity and confidentiality are provided in the Guidelines.
- Please attach your Participant Information Sheet and Consent Form(s) to your application.
- If your research is a replication study or extension of a study for which you already have ethical approval, please attach a copy of that application and its approval. Complete only those sections of this application that relate to things that are different from your previous application.
- If you are undertaking research within the Auckland District Health Board (DHB) (or any other Health Board), you must apply to and follow the respective District Health Board's Ethics Committee's processes in the first instance. Please submit relevant DHB permission / documentation to OPAIC Research Ethics Committee (at [aicresearchethics@op.ac.nz](mailto:aicresearchethics@op.ac.nz))

Please submit your application to Otago Polytechnic Auckland International Campus Ethics Committee via e-mail to [aicresearchethics@op.ac.nz](mailto:aicresearchethics@op.ac.nz) (in a single Word document format).

**Lead Researcher / Primary Contact**

Prabesh Gautam

**Co-researchers (if applicable)**

Not applicable

**Department**

OPAIC

**Phone (office & mobile)****Email Address**

GAUTP1@STUDENT.OP.AC.NZ

**Postal Address**

Level 1, 350 Queen Street  
 PO BOX 5268, Auckland  
 1141, New Zealand

**Title of Project**

Effects of Gamification Mechanism on the Behaviour of Bank Customers

**Commencement Date**

24-10-2021

**Completion Date**

25-02-2022

Staff

Student/Learner

**Lay summary of project (300 words).**

Please make this jargon-free so it can be understood by someone not from your discipline.

*What is the project about and what are the benefits of this research?*

The project is about Gamification in Banking. Gamification simply means adding game elements into non-game environments in order to make non-game products and services more enjoyable and engaging. Gamification is seen to be an effective tool for engaging customers in banking and motivating them to continue using products and services, as well as attracting new customers.

Banks encourage customers to use credit cards to purchase goods, pay bills and carry out different transactions. The gamification element comes into credit cards because, with each completed transaction, the customer will earn points; later, customers can redeem accumulated points for cashback or to buy goods and services from it.

Here is some evidence of banks using the gamification approach in New Zealand:

· ASB

With the ASB Visa Rewards credit card, \$150 spent = 1 True Rewards dollar. When customers are ready to redeem, it is easy because every true Rewards dollar equals one New Zealand Dollar.

True Rewards can be used for the following purposes:

1. Airline ticket, rental car, and accommodation.
2. Transfer to KiwiSaver.
3. Transfer to charities.
4. In-store shopping or gifting.

· ANZ Bank

With the ANZ Visa Cashback credit cards, earn cashback rewards by spending between \$10,000 and \$30,000, customers get 1.0% cash credited back to their bank account. Customers must spend at least \$5,000 or more on eligible purchases to qualify for the cashback rewards.

The effects of gamification in banking should be able to make banking activity more fun and engaging; however, there has been very little research done on the advantages of gamification for banks in the literature. This suggests that the widespread use of gamification encourages customer engagement, which has an impact on customer behaviour, but at the same time, it could raise potential negative outcomes for the customer, such as an increase in spending. Perhaps gamification is beneficial solely for banks? It is unclear how well banks can influence customers to buy products and services using gamification. This study is an opportunity to look at gamification from an alternative perspective. Understanding the key elements and current status of gamification in banking and its effect on customer behaviour development is important for this research to determine the best possible advantage. This study will use a conceptual framework (appendix v) to answer the questions of how the use of gamification affects bank customer engagement, satisfaction, intention, and loyalty. For the conceptual model, the research is design for based on a deductive conceptual model, which requires close-ended questions to measure the dependent and independent variables.

This study will be beneficial to banks that are incorporating gamification into their current products and services, as well as third-party financial institutions that can benefit from gamification. The theoretical results will contribute to the academic study of bank gamifications, and a scenario-based experiment will be useful in more practical use for bank customers to make better financial decisions when using credit cards.

#### **Research aim/s and question/s**

*What questions are you asking/addressing and why?*

This study intends to find out the effects of the gamification mechanism on the behaviour of bank customers. The following questions are set as guidelines to fulfil this aim.

1. Does the use of points and rewards in gamification influence customer credit card purchase behaviour?
2. What are the effects of bank gamification on customer engagement, satisfaction, intention, and loyalty?

3. How are banks trying to shift customers' actions and activity through gamification for the bank's benefits?

#### ETHICAL CONCERNS

In the following section, you must explain clearly and succinctly how you have addressed these issues:

##### **Research design**

Please include a brief outline of the methods being used to conduct this research (300 words max).

*How will the research be done and what methods will you use?*

The research will be done using a quasi-experimental approach, with the survey questionnaire based on an imaginary scenario. This study will employ a quantitative research methodology to examine the effects of gamification on bank customers in terms of various variables. This study's main variables are influencing factors such as engagement, satisfaction, intention, and loyalty. In particular, how gamification can prompt customer motivation. Scenario-based survey questionnaire (appendix iv) is found to be appropriate for collecting data on the effects of gamification on banking customers and investigating relationships between variables. The focus of this study is to identify the typical bank customer behaviour patterns when it comes to using gamification, and the researcher has incorporated these patterns into the scenario. The end-user of credit cards is the focus group of this scenario-based survey design. Taneri (2018) states that scenarios are typically presented in written form as narratives, which include tasks to be completed as well as general to detailed steps for carrying out the procedures. As a result, the scenario presented for this research aids in visualising a concrete description of an activity that engages customers when performing a specific task. For data collection and analysis, the multivariate analysis method will be used, and all data will be collected using Qualtrics. All of this information serves as the foundation for evaluating the data. The path analysis approach will be utilised to find the relationship between independent and dependent variables.

##### **Treaty of Waitangi considerations**

OPAIC researchers have an obligation to consult with Ngāti Whātua as part of developing their research projects, in order to keep Ngāti Whātua informed about research at OPAIC and identify research of significance to Māori. This application will be submitted to the Ngāti Whātua representative on the OPAIC Research and Postgraduate Committee as part of this approval process.

##### **Participants and recruitment**

*How will you approach and invite your participants to take part? Who are they, and what are your inclusion/exclusion criteria?*

The credit cardholders will be the target population for the study. This applies to all New Zealand bank customers, not just specific to one bank customers.

I am using two sampling techniques for this study. Firstly, I am applying a snowball sampling technique. As I work in a bank, I have asked my coworkers to participate in the survey and to share the link with their friends and family members who have credit cards. So far, 39 coworkers have agreed to share the link to the survey with their friends and family.

Secondly, I am using the intercept technique. I plan to stand outside the ANZ and ASB branches in Albany with the approval of the bank manager and ask customers coming in and out if they have time to listen. First, the researcher will introduce himself by displaying his OPAIC student ID and inform customers that I am conducting a survey on the subject (Gamification). I will then explain to the customer what the survey is about and how their participation will benefit my study. If they agree to participate, they will scan the QR code, which I will provide to them on the spot, to be directed to the survey page. Alternatively, I can send them a link to the survey via email. The customer will be prompted to the survey page after clicking the link. Overall, I am using a convenience-based approach for collecting data samples.

The target sample size is about 200 people. No previous literature reported using a larger sample size than 250 participants in similar research topics (gamification in banking); therefore, a medium effective size was chosen. The table in the appendix vi shows what previous studies used for sample size. The target sampling is not a point estimate. It is a target range for the data collection.

#### **Vulnerability**

Vulnerability relates to a person's ability to make decisions freely in their best interests (autonomy) and their ability to stop doing anything they do not want to do.

Vulnerability may relate to a person's health, age, or situation (e.g., prisoner). It may also relate to a person's connections / relationships within the specific research setting (e.g., student, employee, patient, client, peer, etc.). A researcher may also be vulnerable in terms of their relationship with participants.

Please explain any vulnerabilities in your project and describe how these will be managed.

*How are participants and/or researchers potentially vulnerable? What has been put in place to protect them?*

To avoid any privacy violations, questions about customer financial information will not be asked during the survey of bank customers. Customers are allowed not to participate in the survey before even starting the survey. The information from these participants does not relate to specific financial information. Instead, the information sought from voluntary participants is on their perceptions of participating in the game they have experienced and how it has affected outcomes such as customer engagement, satisfaction, intention, and loyalty. Further, the data reported in the study is aggregated perception data, and no individual name or data will be reported. In addition, prior to sending the survey link to their email addresses, participants will be fully informed so that spam emails are not sent. They will also be informed that their responses will be treated as confidential and will only be used for academic purposes and for the purpose of this specific research, and the collected data will be protected by the Privacy Act 1993 No. 20 – New Zealand Legislation. Except as stated above, participants will not be

bombarded with spam emails or physically or psychologically harmed for the purpose of this study.

#### **Socio-cultural considerations**

In what ways, if relevant, have the socio-cultural perspectives of participants been considered?

*How have you considered cultural safety and appropriateness? This may be socio-cultural or connected with a relevant sub-culture or group for participants and/or the researcher(s).*

This survey only includes general questions about customers' perceptions when making purchases with credit cards. These factors do not include any cultural safety concerns and do not offend anyone's cultural sensibilities.

#### **Use of personal information**

Please explain how personal information will be used (for example, will the data be de-identified or remain confidential? Alternatively, will participants be identifiable from the data (with their consent)?)

*Explain how data will be stored, who will have access to it, and how and when it will be disposed of.*

The researcher plans to collect primary data via a survey questionnaire conducted through Qualtrics. The survey link and QR code will be distributed via emails, Facebook and Instagram Message channels. The participants are the actual banking customers in New Zealand. The collected primary data will then be compared to data from previous studies.

It is a two-step process. Participants will be given a QR code that will take them directly to Qualtrics. If they agree to participate, the next step will direct them to Qualtrics. If a participant chooses to withdraw from the survey before the end, their information will be permanently deleted from the database.

The data collected will be securely stored, and only the researcher will have access to it. Qualtrics will store the data, which will be password protected. Any raw data used on which the results are based will be kept in a secure computer for one year (until the researcher's master's thesis is completed); after that, data will be stored for seven years, after which it will be destroyed in accordance with OPAIC policy.

#### **Participant incentives / remuneration or koha**

Please explain any incentives or reimbursements (e.g., for parking/petrol), remuneration (for time), or koha (gift of any kind including money) you may be providing.

*Are you offering any incentive, reimbursement, or koha? If so, could this affect the power relationship between the researcher(s) and the participant(s)?*

No.

#### **Potential harm**

Potential harm (including physical, environmental, emotional, or reputational) can occur to the participant, the researcher, and/or the host organisation associated with the research.

Please identify any risk of potential harm and explain how you have addressed this. Please consider, for example, health and safety procedures, debriefing or counselling related to distress, personal safety, and institutional safety.

*What potential harm could occur to the participants / researcher(s) / host organisation as a result of this research? How have you addressed these potential harms?*

No harm.

#### **Relations with other research ethics committees and institutions**

*Is approval also required from other bodies such as DHBs and/or organisations? Will participants be approached through other organisations?*

No relations.

#### **Forms and appendices to be included**

Please remember to include, where relevant to your research, your:

- i. Participant Information Sheet,
- ii. Consent Form(s)
- iii. Letters of permission from host organisation to access specific information or employees
- iv. The recruitment poster or information sheet and invitation letter / e-mail
- v. Link to an online survey or the questions for participants
- vi. Confidentiality agreements that your transcriber, research assistant(s) will sign

Please remember to submit the whole application as a single Word document.

#### **Signatures:**

Name of the Lead Researcher: Prabesh Gautam

Signature\*:

Name of the Supervisor: Dr Edwin Rajah & Dr Shafiq Alam

Dr. Edwin Rajah  
Signature\*:

Shafiq Alam

\*Insert [signature](#).

**END OF DOCUMENT**

**Appendix B**

Participant Information Sheet

### **Title of project**

Effects of Gamification Mechanism on the Behaviour of Bank Customers

### **General summary of project**

The project is about Gamification in Banking. Gamification simply means adding game elements into non-game environments in order to make non-game products and services more enjoyable and engaging. Gamification is seen to be an effective tool for engaging customers in banking and motivating them to continue using products and services, as well as attracting new customers. Banks encourage customers to use credit cards to purchase goods, pay bills and carry out different transactions. The gamification element comes into credit cards because, with each completed transaction, the customer will earn points; later, customers can redeem accumulated points for cashback or to buy goods and services from it.

Here is some evidence of banks using the gamification approach in New Zealand:

#### **• ASB**

With the ASB Visa Rewards credit card, \$150 spent = 1 True Rewards dollar. When customers are ready to redeem, it is easy because every true Rewards dollar equals one New Zealand Dollar.

True Rewards can be used for the following purposes:

1. Airline ticket, rental car, and accommodation.
2. Transfer to KiwiSaver.
3. Transfer to charities.
4. In-store shopping or gifting.

#### **• ANZ Bank**

With the ANZ Visa Cashback credit cards, earn cashback rewards by spending between \$10,000 and \$30,000, customers get 1.0% cash credited back to their bank account. Customers must spend at least \$5,000 or more on eligible purchases to qualify for the cashback rewards.

The effects of gamification in banking should be able to make banking activity more fun and engaging; however, there has been very little research done on the advantages of gamification for banks in the literature. This suggests that the widespread use of gamification encourages customer engagement, which has an impact on customer behaviour, but at the same time, it could raise potential negative outcomes for the customer, such as an increase in spending. Perhaps gamification is beneficial solely for banks? It is unclear how well banks can influence customers to buy products and services using gamification. This study is an opportunity to look at gamification from an alternative perspective. Understanding the key elements and current status of gamification in banking and its effect on customer behaviour development is important for this research to determine the best possible advantage.

### **Research aim of project**

The research aim is to find out the effects of the gamification mechanism on the behaviour of bank customers.

## **PARTICIPATION**

### **What type of participants are being sought?**

<b>Types of Participants</b>	
Gender	Male, female, and others
Age	18 and above
Nationality	No requirement
Location	New Zealand
Experience	Credit cardholders
Position	No requirement

### **How will potential participants be identified and accessed?**

The researcher intends to use readily available participants. The customers with credit cardholders will be the target population for the study. This applies to all New Zealand bank customers, not just specific to one bank customers.

### **What will participation involve?**

If you agree to participate in this survey, you will be asked questions about the scenarios you will be presented with.

### **How will confidentiality and/or anonymity be protected?**

The study will collect aggregated descriptive information, but no individuals will be identified. It is solely concerned with information on customers' perceptions of their experiences participating in the game and how this has affected outcomes such as customer engagement, satisfaction, intention, and loyalty. Data will be securely stored online (via Qualtrics) until study is completed and moderated. After that data will be stored for seven years, after which it will be destroyed in accordance with OPAIC policy.

### **Can participants change their minds and withdraw from the project?**

You can decline to participate without any disadvantage to yourself. If you choose to participate, you can stop participating in the survey at any time without having to give a reason. You can also withdraw any information that has already been supplied until the stage agreed on the consent form.

## **DATA COLLECTION**

### **What data or information will be collected and how will it be used?**

Results of this research may be published, but any data included will in no way be linked to any specific participant without prior consent.

### **Data storage**

The data collected will be securely stored, and only the researcher will have access to it. Qualtrics will store the data, which will be password protected. Any raw data used on which the results are based will be kept in a secure computer for one year (until the researcher's master's thesis is completed); after that, data will be stored for seven years, after which it will be destroyed in accordance with OPAIC policy.

**CONTACT****What if participants have questions?**

If participants have any questions about the project, either now or in the future, please feel free to contact at [gautpl@student.op.ac.nz](mailto:gautpl@student.op.ac.nz)

**i. Consent form****Consent to Participate in a Research Project (Consent Form)****Title of Project**

Effects of Gamification Mechanism on the Behaviour of Bank Customers

**DECLARATION**

I have read the information sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I understand that:

- My participation in the project is entirely voluntary and I am free to refuse to answer any particular question.
- I am free to stop participating at any time.
- I can choose to withdraw information provided without giving reasons and without any disadvantage.
- I cannot withdraw any information I have supplied after [the data is analyzed / a date / participant identifying information is removed / a questionnaire has been returned].
- My data will be securely stored online (via Qualtrics) and abandoned once the study is completed and moderated.
- The results of the project may be published [*and/or used at a presentation in an academic conference*] but my anonymity / confidentiality will be preserved.
- I can ask to receive a copy of the research findings.

Any additional information given, or conditions agreed to:

I agree to take part in this project under the conditions set out in this Information Sheet.

..... (Participant name and signature)

..... (Researcher name and signature)

..... (Date)

This project has been reviewed and approved by the Otago Polytechnic Auckland International Campus Research Ethics Committee.

## Appendix C

### Questionnaire

# Gamification in Banking (Questionnaire)

---

Start of Block: Consent

X→

**Consent:**

**Effects of Gamification Mechanism on the Behaviour of Bank Customers using Credit Cards**

Dear respondent,

If you have a credit card with a New Zealand bank, you're invited to take part in this scenario-based survey on gamification in banking, which explores how game elements and game design techniques are used when making credit card purchases.

I'm working on a thesis on the effects of gamification in the banking industry. I'm interested to learn your opinions on this topic, so please read the scenario carefully before filling out the survey questions. It will take you less than 30 minutes to complete this research questionnaire. Please be aware that the information you provide will only be used for academic purposes and will be stored on a password-protected computer for seven years before being destroyed.

Participation in this survey is entirely voluntary. You may refuse to participate in the study or leave the survey at any time. By completing this questionnaire, you are giving your consent for your data to be included in my research. If you have any questions about this survey or require a research result, please email me at [gautp1@student.op.ac.nz](mailto:gautp1@student.op.ac.nz).

- Yes I Consent (1)
- No I do not Consent (2)

---

Page Break

## Scenario A

End of Block: Consent

---

Start of Block: Scenario

**Please read the scenario presented and begin the survey on the second page.**

Imagine you have a credit card that provides reward points for purchases charged to the credit card. The accumulated points can be redeemed for products or services from a participating store in the rewards programme. The more points you accumulate, you can exchange them for higher values products or services from stores participating in the rewards exchange programme.

Your current credit card provides that for every \$100 purchase, you get 20 reward points. For example, if you charge your credit card with a purchase of \$500, you will get 100 rewards points on your credit. The bank provides a list of selected stores where you can exchange the reward point for goods or services.

You are now thinking of purchasing a laptop computer priced at \$1800 as a birthday present for your partner. The reward points you get for buying that laptop amount to 360 points. The store where you are purchasing the laptop also allows you to exchange credit card points. You ask the salesperson what you can obtain in exchange for the reward points. The salesperson suggests that you can get a wireless headphone for 360 points. You can also see that there is a premium headphone for 400 points. You then think about whether you want to exchange the rewards points immediately, or should you wait until you have accumulated more points on the credit card to exchange for the higher-end headphone.

---

Page Break

## Scenario B

End of Block: Consent

---

Start of Block: Scenario

**Scenario Please read the scenario presented and begin the survey on the second page.**

Imagine you have a credit card that provides reward points for purchases charged to the credit card. The accumulated points can be redeemed for products or services from a participating store in the rewards programme. The more points you accumulate, you can exchange them for higher values products or services from stores participating in the rewards exchange programme.

Your current credit card provides that for every \$100 purchase, you get 5 reward points. For example, if you charge your credit card with a purchase of \$500, you will get 25 rewards points on your credit. The bank provides a list of selected stores where you can exchange the reward point for goods or services.

You are now thinking of purchasing a laptop computer priced at \$1800 as a birthday present for your partner. The reward points you get for buying that laptop amount to 90 points. The store where you are purchasing the laptop also allows you to exchange credit card points. You ask the salesperson what you can obtain in exchange for the reward points. The salesperson suggests that you can get a phone case/cover for 80 points. You can also see that there is a laptop bag for 100 points. You then think about whether you want to exchange the rewards points immediately for a phone case or should you wait until you have accumulated more points on the credit card to exchange for the laptop bag.

End of Block: Scenario

---

Start of Block: Independent Variable



End of Block: Scenario

Start of Block: Independent Variable



**Q1** Based on the scenario described earlier, please indicate how much you disagree to agree with the following statements. Please answer openly and honestly; there are no right or wrong answers.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I brought forward purchases specifically in order to gain more rewards, discounts or benefits. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like collecting reward points for my credit card purchases. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wanted a credit card with a points and rewards programme. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I looked around and compared credit card point/rewards values. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use rewards credit cards more frequently to build up my points. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have used my credit cards to purchase additional items in order to gain rewards or points from the credit card provider. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Points and rewards played no part in my purchase decision. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

End of Block: Independent Variable

Start of Block: Engagement



**Q2** Based on your personal experience using credit card reward points, please indicate how much you disagree to agree with the following statements about "Engagement". Please answer openly and honestly; there are no right or wrong answers.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I found the reward points for credit cards confusing to use. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found the experience of accumulating points was rewarding. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to use a rewards programme. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel frustrated when accumulating reward points on my credit card. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found it worthwhile to use the points and rewards programme. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found accumulating reward points an interesting experience. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

End of Block: Engagement

Start of Block: Satisfaction



**Q3** Based on your personal experience using credit card reward points, please indicate how much you disagree to agree with the following statements about "Satisfaction". Please answer openly and honestly; there are no right or wrong answers.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I feel satisfied I was able to add reward points to my collections. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rewards Points and loyalty programmes are fun. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to spend more time collecting credit card points than I have planned. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that the points and rewards offered by banks and merchants constantly motivate me to accumulate more points. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think I made the right decision when I accepted my bank's offer of reward points for my credit card. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

End of Block: Satisfaction

Start of Block: Intention to use



**Q4** Based on your personal experience, please indicate how much you disagree to agree with the following statements about your "**Intention to use**" credit card reward points. Please answer openly and honestly; there are no right or wrong answers.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I predict I will collect more points on my credit card in future. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to spend more time collecting reward points on my credit card. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will definitely use a credit card if reward points are offered to me. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will recommend to others that they collect points when they use a credit card. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I intend to continue using my credit card to accumulate points. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page Break

**Descriptive Questions:**

End of Block: Intention to use

---

Start of Block: Gender

**Q5 What is your gender?**

- Male (1)
  - Female (2)
  - Non-binary / third gender (3)
  - Prefer not to say (4)
- 

Page Break

---

End of Block: Gender

Start of Block: Age

**Q6 What is your age?**

- 18 to 24 (1)
  - 25 to 34 (2)
  - 35 to 54 (3)
  - 55 to 74 (4)
  - Above 75 (5)
- 

Page Break

---

End of Block: Age

---

Start of Block: Credit card experience



**Q7 Have you ever had a credit card in the past?**

- Yes (1)**
- No (2)**
- Unsure (3)**

---

Page Break

End of Block: Credit card experience

---

Start of Block: Reward points experience



**Q8 Does your bank offer any rewards, discounts or benefits as part of its features? For example, does it offer cash back, points or air miles?**

- Yes (1)**
- No (2)**
- Unsure (3)**

---

Page Break

End of Block: Reward points experience

---

Start of Block: Types of reward preferred by customer



**Q9 Please rank how desirable you find the following rewards.**

	Undesirable (1)	Somewhat undesirable (2)	Somewhat desirable (3)	Desirable (4)
<b>Gift vouchers (1)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Financial Points (2)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Discounts on shopping/restaurants (3)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Cashback (4)</b>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

---

Page Break

End of Block: Types of reward preferred by customer

---

## Appendix D

### Original Questionnaire



Variables	Original questions	Prepared questions	Sources
Independent variables	Brought forward purchases specifically in order to gain more rewards, discounts or benefits.	I brought forward purchases specifically in order to gain more rewards, discounts or benefits	Leston (2015)
	Why did you stopped using credit card? -The rewards/discount/benefits on an existing credit card were changed.	I like collecting reward points for my credit card purchases	
	I have never looked around and compared different credit cards.	I looked around and compared credit card point/rewards values.	
	Have you chosen to use this rewards credit card more frequently than you would have done otherwise to build up rewards?	I use rewards credit cards more frequently to build up my points.	
	Used your credit cards to purchase additional items in order to gain rewards, benefits or discounts from your credit card provider.	I have used my credit cards to purchase additional items in order to gain rewards or points from the credit card provider.	
	Points and rewards played no part in my purchase decision.	Points and rewards played no part in my purchase decision.	
Engagement	I found this Application X confusing to use.	I found the reward points for credit cards confusing to use.	O'Brien et al., 2018
	My experience was rewarding.	I found the experience of accumulating points was rewarding.	
	Using this Application X was taxing.	It is easy to use a rewards programme.	
	I felt frustrated while using this Application X.	I feel frustrated when accumulating reward points on my credit card.	
	Using Application X was worthwhile.	I found it worthwhile to use the points and rewards programme.	

	I felt interested in this experience.	I found accumulating reward points an interesting experience.	
Satisfaction	I enjoy playing the game	I feel satisfied I was able to add reward points to my collections.	Putzer (2018)
	I think the game is fun.	Rewards Points and loyalty programmes are fun.	
	I tend to spend more time playing the game than I have planned.	I tend to spend more time collecting credit card points than I have planned.	
	I feel the game constantly motivates me to proceed further to the next stage or level.	I feel that the points and rewards offered by banks and merchants constantly motivate me to accumulate more points.	
	I think I made the right decision when I accepted my bank's offer of reward points for my credit card.	I think I made the right decision when I accepted my bank's offer of reward points for my credit card.	
Intention	I predict I will play <u>Pokemon Go</u> in the future.	I predict I will collect more points on my credit card in future.	Kosa and Uysal (2020) & Xu et al. (2020) Hsieh and Wen (2011)
	I am willing to spend more time than I had planned on this website.	I am willing to spend more time collecting reward points on my credit card.	
	I will definitely play if coins are offered to me.	I will definitely use a credit card if reward points are offered to me.	
	I will recommend the game to other people.	I will recommend to others that they collect points when they use a credit card.	
	I intend to pay for some goods or VIP services.	I intend to continue using my credit card to accumulate points.	

## Appendix E

## Descriptive

**What is your age? \* What is your gender? Crosstabulation**

		What is your gender?		Total	
		Male	Female		
What is your age?	18 to 24	Count	4	8	12
		% of Total	4.5%	9.1%	13.6%
	25 to 34	Count	15	25	40
		% of Total	17.0%	28.4%	45.5%
	35 to 54	Count	18	12	30
		% of Total	20.5%	13.6%	34.1%
	55 to 74	Count	2	4	6
		% of Total	2.3%	4.5%	6.8%
Total		Count	39	49	88
		% of Total	44.3%	55.7%	100.0%

**Have you ever had a credit card in the past?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	76	86.4	86.4	86.4
	No	11	12.5	12.5	98.9
	Unsure	1	1.1	1.1	100.0
	Total	88	100.0	100.0	

**Does your bank offer any rewards, discounts or benefits as part of its features? For example, does it offer cash back, points or air miles?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	64	72.7	72.7	72.7
	No	15	17.0	17.0	89.8
	Unsure	9	10.2	10.2	100.0
	Total	88	100.0	100.0	

**Please rank how desirable you find the following rewards. – Gift vouchers**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undesirable	7	8.0	8.0	8.0
	Somewhat undesirable	11	12.5	12.5	20.5
	Somewhat desirable	32	36.4	36.4	56.8
	Desirable	38	43.2	43.2	100.0
	Total	88	100.0	100.0	

**Please rank how desirable you find the following rewards. – Financial Points**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undesirable	8	9.1	9.1	9.1
	Somewhat undesirable	12	13.6	13.6	22.7
	Somewhat desirable	36	40.9	40.9	63.6
	Desirable	32	36.4	36.4	100.0
	Total	88	100.0	100.0	

**Please rank how desirable you find the following rewards. – Discounts on shopping/restaurants**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undesirable	9	10.2	10.2	10.2
	Somewhat undesirable	10	11.4	11.4	21.6
	Somewhat desirable	24	27.3	27.3	48.9
	Desirable	45	51.1	51.1	100.0
	Total	88	100.0	100.0	

**Please rank how desirable you find the following rewards. – Cashback**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undesirable	1	1.1	1.1	1.1
	Somewhat undesirable	3	3.4	3.4	4.5
	Somewhat desirable	30	34.1	34.1	38.6
	Desirable	54	61.4	61.4	100.0
	Total	88	100.0	100.0	

## Appendix F

### Correlations

#### Correlations

		Amount of Gamification (Independent Variable)	Customer Engagement (Dependent Variable)	Customer Satisfaction (Dependent Variable)	Customer Intention to Use (Dependent Variable)
Amount of Gamification (Independent Variable)	Pearson Correlation	1	.619**	.812**	.766**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	88	88	88	88
Customer Engagement (Dependent Variable)	Pearson Correlation	.619**	1	.737**	.679**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	88	88	88	88
Customer Satisfaction (Dependent Variable)	Pearson Correlation	.812**	.737**	1	.805**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	88	88	88	88
Customer Intention to Use (Dependent Variable)	Pearson Correlation	.766**	.679**	.805**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	88	88	88	88

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## Appendix G

### T-Test

#### Group Statistics

	groups	N	Mean	Std. Deviation	Std. Error Mean
Customer Engagement (Dependent Variable)	low gamification	44	4.1212	.80884	.12194
	high gamification	44	4.7500	.47072	.07096
Customer Satisfaction (Dependent Variable)	low gamification	44	3.9818	1.18504	.17865
	high gamification	44	5.2091	.74203	.11187
Customer Intention to Use (Dependent Variable)	low gamification	44	4.2682	1.23811	.18665
	high gamification	44	5.3864	.92651	.13968

#### Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Customer Engagement (Dependent Variable)	Equal variances assumed	5.449	.022	-4.457	86	<.001	<.001	-.62879	.14108	-.90925	-.34832
	Equal variances not assumed			-4.457	69.130	<.001	<.001	-.62879	.14108	-.91023	-.34734
Customer Satisfaction (Dependent Variable)	Equal variances assumed	5.885	.017	-5.822	86	<.001	<.001	-1.22727	.21078	-1.64630	-.80825
	Equal variances not assumed			-5.822	72.226	<.001	<.001	-1.22727	.21078	-1.64744	-.80710
Customer Intention to Use (Dependent Variable)	Equal variances assumed	1.647	.203	-4.796	86	<.001	<.001	-1.11818	.23313	-1.58162	-.65474
	Equal variances not assumed			-4.796	79.662	<.001	<.001	-1.11818	.23313	-1.58215	-.65421

# Appendix H

## Dataset in SPSS

Combined Data.sav [DataSet1] - IBM SPSS Statistics Data Editor

Visible: 38 of 38 Variables

Group	Responseld	Con sent	Q1_1	Q1_2	Q1_3	Q1_4	Q1_5	Q1_6	Q1_7	Q2_1	Q2_2	Q2_3	Q2_4	Q2_5	Q2_6	Q3_1	Q3_2	Q3_3	Q3_4	Q3_5
90	1_R_3G9rksPjkjpmACg	1	3	5	4	7	2	3	5	4	4	4	4	4	4	4	4	4	4	4
91	1_R_3IC5r7WawNs3QQ5	1	6	5	4	4	5	6	5	4	4	6	4	4	5	5	4	4	4	5
92	1_R_3hyK3ItBcWwrtf	1	4	7	7	5	6	6	1	5	6	6	2	6	6	5	5	4	4	4
93	1_R_1N9W35sIDnVqHj	1	4	6	5	5	6	5	3	5	4	4	4	5	5	5	5	3	5	5
94	1_R_3NBniinDUARzmy	1	4	6	2	6	5	6	5	5	6	5	6	6	6	3	6	2	5	5
95	1_R_xmdKsKKRLQ850v7	1	2	7	4	1	7	1	5	1	6	7	1	6	5	6	5	1	1	1
96	1_R_3ISSDRtWFEOrGA	1	3	5	3	5	5	3	5	4	5	5	3	4	4	4	4	3	3	3
97	1_R_3IDHHkuL6TEsPXU	1	5	7	7	7	7	6	1	3	6	6	2	6	5	6	5	5	6	6
98	1_R_s6koAyvdsMTzbXz	1	2	6	6	6	4	6	5	2	6	5	4	6	6	6	6	4	6	6
99	1_R_2YmJ3wjHtjgpi	1	2	1	4	5	2	2	6	4	2	3	6	2	2	2	3	1	2	2
100	1_R_25Bmdv5eh9ETg6	1	6	7	7	7	7	7	3	1	7	4	2	7	7	7	6	3	6	6
101	1_R_2Tvpnsne2tMk9jp	1	6	7	6	6	7	7	1	2	6	6	1	7	7	6	7	5	6	6
102	1_R_1qh9vcPuyEbCh	1	3	2	4	5	5	3	4	7	4	4	4	5	4	6	4	4	3	3
103	1_R_9sHLHQ1ZOHI9oB	1	7	7	7	7	7	7	1	5	7	7	1	5	7	7	7	7	7	7
104	1_R_25KscTarCZ2UNGI	1	6	6	6	5	7	5	4	1	5	7	3	4	3	6	5	4	5	5
105	1_R_cvwljCWuSgLRzWb	1	5	7	6	6	7	6	3	3	6	6	3	6	6	6	7	4	6	6
106	1_R_1feGixI9lnk8qif	1	3	7	7	2	7	6	6	1	7	7	1	7	7	7	5	4	7	7
107	1_R_2Zjmls7gsKjCW	1	3	6	7	6	6	5	3	3	6	6	2	6	5	5	5	5	3	3
108	1_R_21HXoRikRkfiwho	1	2	5	5	1	5	2	3	2	4	6	3	6	5	5	4	5	3	3
109	1_R_2zDctHRIn1SeZK6	1	6	7	7	5	4	7	2	3	6	7	1	6	6	6	4	4	5	5
110	1_R_111K2dybOKE1VYS	1	6	5	7	5	6	5	2	6	6	3	6	3	4	5	5	6	2	2

Data View Variable View

IBM SPSS Statistics Processor is ready Unicode:ON Classic

COMBINED DATASET.sav [DataSet1] - IBM SPSS Statistics Data Editor

Visible: 39 of 39 Variables

99 : Q1_6	Q3_2	Q3_3	Q3_4	Q3_5	Q4_1	Q4_2	Q4_3	Q4_4	Q4_5	Q5	Q6	Q7	Q8	Q9_1	Q9_2	Q9_3	Q9_4	Gamification	Engagement	Satisfaction	Intention
63	5	4	5	4	6	3	5	6	4	1.0	2	1	2	2	2	4	3	5.57	3.83	4.80	4.80
64	7	4	6	6	7	5	7	6	7	2.0	3	1	1	4	3	2	4	5.71	5.00	5.80	6.40
65	5	4	7	7	7	7	7	7	7	2.0	2	1	1	4	4	4	4	5.43	5.00	6.00	7.00
66	5	5	3	6	6	5	6	6	5	1.0	3	1	1	4	4	4	4	5.14	4.67	4.80	5.60
67	4	4	5	7	6	1	3	4	2	1.0	2	1	1	4	3	3	3	5.43	4.83	5.20	3.20
68	5	6	2	5	2	6	7	5	6	1.0	3	1	1	2	3	4	4	5.14	4.67	4.60	5.20
69	5	1	1	4	7	2	7	7	7	1.0	2	1	2	4	1	1	4	5.29	3.33	3.40	6.00
70	4	2	4	6	6	2	4	5	6	1.0	1	1	1	3	4	3	3	5.00	4.33	4.00	4.60
71	6	6	2	6	5	5	4	6	6	1.0	2	1	1	4	3	4	3	5.00	4.50	5.00	5.20
72	5	5	5	6	5	5	5	5	5	1.0	4	1	1	3	3	3	3	6.14	4.67	5.40	5.00
73	7	1	7	7	7	4	7	7	7	2.0	2	1	1	4	4	4	4	5.00	6.00	5.80	6.40
74	7	5	6	7	7	4	7	6	7	1.0	3	1	1	4	4	4	4	5.86	4.83	6.20	6.20
75	7	6	5	7	7	4	7	6	7	1.0	3	1	2	3	4	4	2	5.57	4.83	6.20	6.20
76	4	5	5	3	4	4	5	5	5	1.0	2	1	1	3	4	4	3	5.43	4.50	4.20	4.60
77	5	5	6	4	2	3	5	4	4	2.0	1	2	2	3	2	2	3	4.86	5.33	5.20	3.60
78	3	6	3	5	3	2	2	4	2	2.0	2	1	1	3	3	4	4	5.00	4.33	4.60	2.60
79	5	5	5	5	5	5	5	5	5	2.0	2	1	1	3	3	3	4	5.43	4.67	5.00	5.00
80	7	6	7	6	6	6	6	6	6	1.0	2	1	3	4	4	4	4	5.57	4.83	6.40	6.00
81	6	6	6	6	6	6	6	6	6	1.0	2	1	2	3	3	3	3	5.86	4.67	6.00	6.00
82	5	4	6	6	5	4	6	5	6	1.0	1	1	2	4	4	4	3	5.43	4.83	5.20	5.20
83	6	5	5	5	6	5	5	6	5	2.0	2	1	1	3	3	4	3	5.43	5.00	5.40	5.40
84	5	2	5	6	6	5	6	6	6	2.0	2	1	1	3	4	4	4	5.29	4.33	4.60	5.80
85	5	4	5	5	5	4	5	5	5	2.0	2	1	1	3	3	4	4	5.29	4.83	4.80	4.80
86	6	6	6	6	6	6	6	6	6	2.0	1	1	1	4	4	4	4	5.43	4.67	6.00	6.00
87	6	2	6	6	5	5	7	6	6	1.0	3	1	1	4	4	4	4	4.86	4.50	5.20	5.80
88	5	5	5	5	5	5	5	5	5	1.0	3	1	1	4	4	4	4	5.29	5.50	5.00	5.00

Data View Variable View

IBM SPSS Statistics Processor is ready Unicode:ON Classic