THE IMPACT OF FINTECH SERVICES ON CUSTOMER SATISFACTION AND CUSTOMER LOYALTY IN THE BANKING INDUSTRY IN THE NETHERLANDS

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Management summary

This research examines the influence of FinTech services on customer satisfaction and customer loyalty within the Dutch banking sector. The central research question addressed was: 'How does the adoption of FinTech services affect customer satisfaction and customer loyalty in the Dutch banking sector?' The study aimed to understand to what extent FinTech services contribute to customer satisfaction and loyalty, and what role demographic factors such as age, gender, education, and income play in this relationship.

The study employed a quantitative approach, collecting data from students at the University of Twente through an online survey. The survey focused on participants' usage of FinTech services, their satisfaction with these services, and their loyalty toward their respective banks. Regression analyses were conducted to investigate the relationship between FinTech adoption and the outcomes of customer satisfaction and loyalty. Demographic variables were included as controls to ensure the robustness of the findings.

The results showed that the adoption of FinTech services did not have a significant impact on customer satisfaction or loyalty, even after accounting for demographic factors such as age, gender, education, and income. This suggests that, in the Netherlands, FinTech services do not play a major role in enhancing customer satisfaction or loyalty within the banking sector. A possible explanation is that Dutch banking services already meet customer expectations effectively, leaving little room for FinTech services to make a noticeable difference. The high level of satisfaction with traditional banking services may, therefore, limit the potential impact of FinTech services in this context.

Given these findings, it is recommended that future research explore other factors that may influence customer satisfaction and loyalty. While FinTech adoption in the Dutch banking sector does not appear to be a significant predictor, further investigation is necessary to assess more specific characteristics of the FinTech services themselves, such as usability, security, and integration with existing banking systems. Additionally, future studies should include a more diverse and broader sample beyond students, encompassing different age groups, income levels, and professional backgrounds. This would allow for a more comprehensive understanding of the impact of FinTech services across various demographics. Moreover, it would be valuable for future research to adopt longitudinal designs, enabling an examination of how customer satisfaction and loyalty evolve over time as FinTech services become more integrated into everyday banking practices. Longitudinal studies could reveal more about the long-term effects of FinTech services on customer behavior, which cross-sectional studies, such as this one, may not capture.

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1. Introduction

The rise of financial technology (FinTech) has significantly transformed the banking industry by integrating advanced technology into financial services and challenging traditional banking norms. Driven by the demand for faster, more efficient, and customer-centric solutions, FinTech has introduced innovative products and services that are reshaping the financial landscape (Gomber, Kauffman, & Weber, 2018).

Modern consumers now expect more personalized, accessible, and user-friendly services, compelling traditional banks to revamp their digital strategies (Zavolokina et al., 2016). Innovations such as mobile payment solutions, online loans, robo-advisors, and blockchain technology aim to enhance Customer Satisfaction and loyalty. Customer Satisfaction and Customer Loyalty are crucial for the sustainability and success of banks. Satisfied customers are more likely to remain loyal, leading to repeat business and positive word-of-mouth (Hallowell, 1996). Despite the potential benefits of FinTech, the extent to which these services contribute to Customer Satisfaction and loyalty remains underexplored. Some studies suggest that FinTech improves Customer Satisfaction through enhanced user experiences and efficiency (Lee & Shin, 2018), while others highlight challenges like privacy and security issues that can undermine trust (Romānova & Kudinska, 2016).

The impact of FinTech on Customer Satisfaction varies across regions. In India and China, FinTech services have been shown to positively influence satisfaction and loyalty (Huparikar & Shinde, 2022; Almomani & Alomari, 2021). Conversely, in Malaysia, security and privacy concerns significantly affect Customer Satisfaction with mobile payment services (Zameer et al., 2015). In Jordan, customers of Islamic banks show reluctance towards FinTech due to cultural and religious concerns (Alnsour, 2022). In Latin America, FinTech Adoption benefits primarily the urban elite and tech-savvy youth, with broader populations remaining hesitant (Ioannou & Wójcik, 2022).

Given these diverse regional impacts, this research aims to analyze how FinTech Adoption influences Customer Satisfaction and loyalty in the Dutch banking industry. To address this research gap, the following question has been formulated:

How does the Adoption of FinTech services affect Customer Satisfaction and Customer Loyalty in the banking industry in The Netherlands?

Five hypotheses were developed to answer the central research question. These hypotheses aim to elucidate and contribute to the investigation of the core research inquiry.

Hypothesis 1. Higher FinTech Adoption has a positive effect on Customer Satisfaction in the banking sector.

Hypothesis 2. Higher FinTech Adoption has a positive effect on Customer Loyalty to banks.
Hypothesis 3. The type of FinTech service has a differential effect on Customer Satisfaction with banks.
Hypothesis 4. Customer Satisfaction mediates the relationship between FinTech Adoption and Customer Loyalty in the banking sector.
Hypothesis 5. Demographic factors such as age, income, and education level influence the relationship between FinTech Adoption, Customer Satisfaction, and Customer Loyalty in the banking sector.

Research on the relationship between FinTech services, Customer Satisfaction and loyalty is academically relevant for several reasons. The research can clarify the relationship between FinTech services, Customer Satisfaction, and Customer Loyalty by extending and deepening existing theories on Customer Satisfaction and Customer Loyalty in the context of FinTech services. It can provide new insights into the factors that influence Customer Satisfaction and loyalty when using FinTech services and help understand the moderating and mediating effects of different variables on this relationship. In addition, the research can apply theories from other disciplines, such as psychology, sociology and marketing, in the FinTech context. This may lead to new insights into the motivations and of customers using FinTech services. The findings of the research may also have policy implications, by helping policymakers develop regulations that promote the development of FinTech services while protecting consumers. Furthermore, the research may contribute to the development of more general theories on technology Adoption, Customer Satisfaction and loyalty. The study offers not only academic relevance but also practical benefits for various stakeholders, including banks, FinTech companies, and policymakers. For banks, this research can provide valuable insights into which FinTech services lead to satisfied and loyal customers. By understanding these dynamics, banks can develop enhanced FinTech strategies to retain existing customers and attract new ones. The findings from the survey can guide banks in selecting FinTech services that are most likely to increase Customer Satisfaction. FinTech companies can benefit from the research by gaining a deeper understanding of bank customers' needs and expectations regarding FinTech services. This knowledge will enable them to develop services that are better aligned with customers' demands. Additionally, it can help FinTech companies establish strategic partnerships with banks, allowing them to offer their services to a broader audience. Utilizing the research findings, FinTech companies can enhance their services and subsequently increase their market share. For policymakers, the research can provide critical insights into the impact of FinTech on competition within the financial sector. This understanding is essential for developing regulations that encourage innovation in the FinTech sector while ensuring financial stability. Furthermore, the research can help policymakers design regulations to protect consumers from potential risks associated with FinTech services. The study's results can guide the creation of policies that promote the growth of the FinTech sector while safeguarding consumer interests.

2. Literature review

This literature review explores the existing research on the impact of FinTech Adoption on Customer Satisfaction and loyalty within the banking sector. The rise of financial technology, commonly known as FinTech, has fundamentally transformed the banking industry in recent years. FinTech represents the integration of advanced technology into the provision of financial services, leading to innovative products and services that challenge traditional banking norms. This development has been driven by the increasing demand for faster, more efficient, and customer-centric financial solutions as noted by Peter Gomber Robert J. Kauffman & Weber (2018).

One of the primary drivers behind the widespread Adoption of FinTech services is the evolving expectations of customers. Modern consumers demand more personalized, accessible, and user-friendly services, which has compelled traditional banks to rethink and overhaul their digital strategies (Zavolokina et al., 2016). The digitization of banking services encompasses a wide range of innovations, including mobile payment solutions, online loans, robo-advisors, and blockchain technology. Each of these innovations is designed with the goal of enhancing Customer Satisfaction and fostering loyalty.

Customer Satisfaction and Customer Loyalty are crucial factors for the sustainability and success of banks. Satisfied customers are more likely to remain loyal to their financial institutions, leading to repeat business and positive word-of-mouth referrals (Hallowell, 1996). However, the degree to which FinTech services contribute to Customer Satisfaction and loyalty remains a relatively unexplored area in academic literature. Some studies suggest that FinTech has a positive impact on Customer Satisfaction through improved user experiences and increased efficiency (Lee & Shin, 2018). While others highlight challenges such as privacy and security issues that can undermine customer trust (Romānova & Kudinska, 2016).

Various studies have revealed that the impact of FinTech on Customer Satisfaction varies significantly across different regions. For instance, FinTech services such as mobile payments and online banking in India have been shown to positively influence Customer Satisfaction, resulting in increased loyalty, according to Huparikar & Shinde (2022). Similarly, Almomani & Alomari (2021) found that FinTech services in China also impact Customer Satisfaction, leading to higher rates of service reuse and recommendations to others. Conversely, a study by Zameer et al., (2015) in Malaysia indicated that security and privacy concerns plan a significant role in influencing Customer Satisfaction with mobile payment services. Customers express concerns about the security of their personal data and the reliability of the technology, which can lead to lower levels of satisfaction. Additionally, a study in Jordan found that despite the general benefits of FinTech, customers of Islamic banks exhibit some reluctance toward adopting FinTech services. This is primarily due to perceptual barriers and concerns about the compatibility of FinTech with their religious and cultural values (Alnsour, 2022). In Latin

America, the results are mixed. Although FinTech usage in countries such as Brazil and Mexico is on the rise, research indicates that it is mainly the urban elite and tech-savvy youth who benefit from these services. The broader population, particularly in economically unstable areas, remains hesitant due to concerns about financial inclusion and the reliability of FinTech platforms (Ioannou & Wójcik, 2022).

The variation in results across different regions underscores the necessity for cross-regional analysis. By gaining insights into these factors, both academics and practitioners in the financial sector can develop more effective and customer-centric services. These services, in turn, will contribute to the sustainability and growth of the financial sector. For example, understanding regional preferences and concerns can enable banks to tailor their FinTech offerings to better meet the specific needs and expectations of their customers.

By gaining insights into these factors, both academics and practitioners in the financial sector can develop more effective and customer-centric services. These services, in turn, will contribute to the sustainability and growth of the financial sector. For example, understanding regional preferences and concerns can enable banks to tailor their FinTech offerings to better meet the specific needs and expectations of their customers.

3. Theoretical framework

This chapter discusses the theoretical frameworks and concepts that form the basis of this research. The theoretical framework serves as a guide for interpreting the research findings and provides a structure for analyzing the research findings. It consists of an overview of relevant theories, models and previous studies that contribute to an in-depth understanding of the phenomenon under investigation.

3.1.Conceptual Definitions

To provide clarity and context for this research, the following key constructs are defined:

FinTech is a financial industry that applies technology to improve financial activities (Schueffel, 2016).

FinTech Adoption is the utilization of financial technology services offered by banks, such as mobile banking, peer-to-peer payments, and robo-advice. This construct reflects the extent to which customers embrace and use these technological advancements in their banking activities (Setiawan et al., 2021).

Customer Satisfaction is the degree of contentment among customers regarding their banking experiences. This construct measures how satisfied customers are with the services provided by their banks, encompassing aspects such as service quality, convenience, and overall experience. Meaning that the consumer feels that the experience fulfills some need, desire, or goal and that this fulfillment is pleasurable (Oliver, 1997).

Customer Loyalty is the likelihood of customers continuing to use their bank's services and recommending them to others. This construct indicates the strength of the relationship between the bank and its customers, reflecting their commitment and intention to remain with the bank in the future (Oliver, 1997).

Types of FinTech services are the various FinTech services that might have different impacts on Customer Satisfaction. This construct categorizes the diverse range of financial technology services available to customers, each potentially affecting their satisfaction levels differently. The different types of FinTech services are:

- *Mobile banking*

  Apps from banks to manage your bank account, transfer money, pay bills, check balances and manage your debit card (Ryabova, 2015; Takeda & Ito, 2021; Dharmadasa, 2021; Giglio, 2021;Scott, 2020; Amalia, 2016)
- *Contactless payments*

Paying with your smartphone or smartwatch at shops that accept contactless payments with technologies such as NFC (Scott, 2020; Amalia, 2016).

- *Peer-to-peer payments*

  Services such as Tikkie, Bunq and Knab to transfer money directly to other individuals, without bank intervention (Ryabova, 2015; Giglio, 2021; Scott, 2020; Amalia, 2016)

- *Digital wallets*

  Apps such as Apple Pay and Google Pay to make contactless payments, shop cards and credit cards digitally and store balances (Ryabova, 2015; Dharmadasa, 2021; Giglio, 2021; Scott, 2020; Amalia, 2016).

- *International transfers*

  Transferring money to bank accounts in other countries, often at competitive rates than traditional transfers (Amalia, 2016).

- *Budgeting & money management tools*

  Apps and online tools to track your income and expenses, create budgets, set savings goals and monitor your financial health (Amalia, 2016).

- *Savings accounts*

  Accounts at your bank to save money with interest, often with different savings forms and options (Amalia, 2016).

- *Investments*

  Investing in stocks, bonds, mutual funds or other investment products to grow your wealth over the long term (Takeda & Ito, 2021; Dharmadasa, 2021; Giglio, 2021; Scott, 2020**;** Amalia, 2016).

- *Loans*

  Borrowing money from your bank for various purposes, such as a car, house or study, with repayment obligation and interest (Takeda & Ito, 2021; Dharmadasa, 2021; Cumming et al., 2023; Giglio, 2021; Scott, 2020; Amalia, 2016).

- *Advanced authentication*

  Enhanced security methods such as fingerprint or facial recognition to ensure secure access to your bank account (Lestari & Rahmanto, 2021; Scott, 2020; Amalia, 2016).

- *Transaction monitoring*

  Monitor your bank account transactions to detect fraudulent activity or unauthorized spending in a timely manner (Scott, 2020; Amalia, 2016).

- *Security tips*

  Advice and tips from your bank to make online banking more secure, such as using strong passwords and avoiding phishing websites (Amalia, 2016).

- *Insurance through bank*

Online comparison and conclusion of insurance for car, home, travel and other needs through your bank (Giglio, 2021; Chakraborty, 2018; Scott, 2020; Amalia, 2016).

- *Online currency exchange*

  Exchange money from one currency to another at competitive rates through online platforms or your bank (Amalia, 2016).

Demographic factors are characteristics such as age, income, and education level that might influence FinTech Adoption, satisfaction, and loyalty. This construct considers how different demographic attributes of customers can impact their engagement with FinTech services and their overall banking experience (Armstrong et al., 2005).

3.2. Relevant Theories and Models

This section explores several key theories and models that provide a foundational framework for understanding the relationship between FinTech Adoption, Customer Satisfaction, and Customer Loyalty in the banking industry.

3.2.1. Expectancy-Disconfirmation Theory (EDT)

The Expectancy-Disconfirmation Theory (EDT) is a model used to understand how customers evaluate their satisfaction with products or services. The theory was first introduced by R. Oliver (1977) and has since received much attention in the field of consumer behavior and marketing.

The core principles of EDT:

- *Expectations*

  Prior to a purchase or experience, customers form certain expectations about what they will receive. These expectations are influenced by previous experiences, word of mouth, advertising, price perception, and other factors. Expectations serve as a reference point against which customers evaluate their actual experiences.

- *Disconfirmation*

  After customers experience a product or service, they compare their experience with their original expectations. If the experience matches or exceeds expectations, this is termed positive disconfirmation, often resulting in Customer Satisfaction or positive surprise. Conversely, if the experience falls short of expectations, it is termed negative disconfirmation, leading to dissatisfaction or frustration.

- *Satisfaction*

  The degree of positive or negative disconfirmation affects the customer's overall satisfaction. Positive disconfirmation typically leads to satisfaction and increased loyalty,

while negative disconfirmation can result in dissatisfaction and reduced likelihood of repeat purchases.

- *Repeated interactions*

  EDT suggests that this cycle of expectation, disconfirmation, and satisfaction applies not only to single interactions but also to repeated interactions with a brand or organization. Repeated positive disconfirmation can strengthen Customer Loyalty, whereas repeated negative disconfirmation can lead to customer attrition.

The Expectancy-Disconfirmation Theory provides a framework for understanding how Customer Satisfaction is shaped and how this can affect Customer Loyalty. It emphasizes the importance of managing customer expectations and delivering consistent, positive experiences to promote Customer Satisfaction and loyalty. The EDT can therefore be used to investigate the relationship between Customer Satisfaction and loyalty.

3.2.2. The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by F. Davis (1989), is a widely used framework for explaining the acceptance and use of new technologies. F. Davis posited that when people perceive a new technology as useful and easy to use, they are more likely to accept and adopt it. These perceptions can be influenced by external factors such as social influence and user demographics.

The core principles of TAM:

- *Perceived Usefulness and FinTech Adoption*

  Research can examine how customers perceive the usefulness of FinTech services. This can be measured through surveys or interviews, asking customers how FinTech services facilitate or improve their financial tasks. Studies often show that higher perceived usefulness correlates with higher likelihood of Adoption.

- *Perceived Ease of Use and FinTech Adoption*

  Another area of focus can be customers' perceptions of the ease of use of FinTech services. This can be investigated through user tests or surveys assessing the user-friendliness of FinTech applications. If customers find FinTech services easy to use, they are more likely to adopt them.

- *Customer Satisfaction and Loyalty*

  It is crucial to explore the relationship between the acceptance of FinTech services and Customer Satisfaction. Perceived usefulness and ease of use of FinTech can enhance Customer Satisfaction with banking services, which in turn fosters Customer Loyalty.

Satisfied customers are more likely to remain with the same bank and potentially purchase additional products or services.

3.2.3. Service Quality Theory

Service Quality Theory has evolved through contributions from various researchers, with significant influence from A. Parasuraman, V. Zeithaml, and L. Berry. They introduced the SERVQUAL model, which provides a standardized method for measuring customers perceptions of service quality (Parasuraman et al., 1985).

The SERVQUAL model identifies five dimensions of service quality:

- *Reliability*
  The ability to deliver promised services dependably and accurately.
- *Responsiveness*
  The willingness to help customers promptly and appropriately.
- *Empathy*
  The ability to understand and respond to customers' needs and circumstances.
- *Assurance*
  The competence and confidence the customer has in the service provider's reliability.
- *Tangibility*
  The physical aspects of service delivery, such as the appearance of facilities, equipment, and staff.

The SERVQUAL model is frequently used in research to measure and improve service quality across various industries, including banking. In the context of researching the Adoption of FinTech services, Service Quality Theory can be applied to examine how the quality of FinTech services aligns with the SERVQUAL dimensions and how this quality impacts Customer Satisfaction and loyalty.

3.2.4. Relationship marketing theory

Relationship Marketing Theory emerged as a response to the traditional transactional approach to marketing, which focused primarily on single transactions. Instead, Relationship Marketing Theory emphasizes building long-term, valuable relationships with customers, focusing on creating Customer Satisfaction, trust, and loyalty.

L.L. Berry (1995), one of the early proponents of relationship marketing, highlighted the importance of long-term customer relationships in the service industry in his work, "Relationship Marketing of Services: Growing Interest, Emerging Perspectives". Another key figure, T. Levitt (1984), argued in his

article, "Marketing Myopia," that companies should not only focus on products and transactions but also on understanding and meeting customers' long-term needs.

Over the years, many researchers, including R. Cialdini, P. Kotler, and G.L. Lilien, have contributed to the development and refinement of Relationship Marketing Theory. This theory is applicable not only to the marketing of products and services but also has broad applications across various industries, including banking, where long-term customer relationships are crucial for success.

By leveraging these theories, this study aims to develop an in-depth understanding of the factors influencing the impact of FinTech services on Customer Satisfaction and loyalty.

3.3.Integration of hypotheses and theories

This section explores how hypotheses are integrated with established theoretical frameworks to offer a comprehensive understanding of the underlying dynamics. Each hypothesis is rooted in pertinent theories that clarify the relationships between FinTech Adoption, Customer Satisfaction, and Customer Loyalty in the banking sector. By aligning each hypothesis with a specific theoretical foundation, the anticipated interactions and outcomes of FinTech service utilization can be more effectively interpreted.

3.3.1. Impact of FinTech Adoption on Customer Satisfaction

The first hypothesis examines how increased Adoption of FinTech services influences Customer Satisfaction in the banking sector. The relationship is explored through the lens of the Expectancy-Disconfirmation Theory (EDT), which posits that Customer Satisfaction is determined by the alignment between expectations and actual service experiences. The theory suggests that when FinTech services meet or exceed customer expectations, positive disconfirmation occurs, leading to higher satisfaction levels.

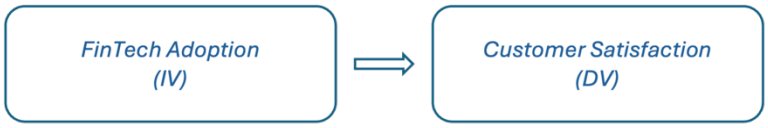

Figure 3-1. Hypothesis 1 - Impact of Higher FinTech Adoption on Customer Satisfaction

3.3.2. Impact of FinTech Adoption on Customer Loyalty

The second hypothesis investigates whether greater FinTech Adoption results in enhanced Customer Loyalty to banks. This hypothesis is supported by Relationship Marketing Theory, which emphasizes the importance of cultivating long-term, valuable relationships with customers. The theory highlights

that when FinTech services consistently meet customer expectations and provide positive experiences, they foster stronger Customer Loyalty by reinforcing trust and satisfaction.

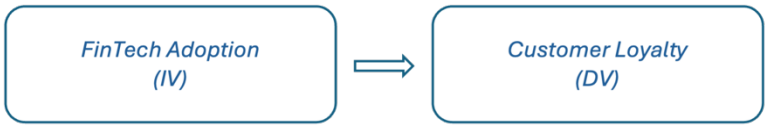

Figure 3-2. Hypothesis 2 - Effect of Higher FinTech Adoption on Customer Loyalty

3.3.3. Differential Effect of FinTech Service Types on Customer Satisfaction

The third hypothesis addresses whether different types of FinTech services impact Customer Satisfaction differently. This hypothesis is framed within the Service Quality Theory, utilizing the SERVQUAL Model. The model evaluates service quality based on five dimensions: reliability, responsiveness, empathy, assurance, and tangibility. By applying this model, it is possible to assess how various FinTech services, which are mentioned in section 3.1, influence Customer Satisfaction differently based on their service quality.

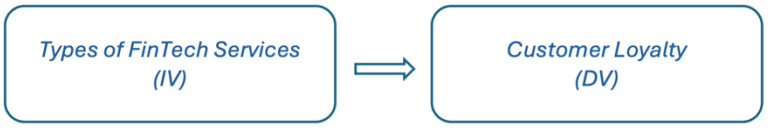

Figure 3-3. Hypothesis 3 - Differential Effect of Various FinTech Services on Customer Satisfaction

3.3.4. Mediation Effect of Customer Satisfaction on FinTech Adoption and Loyalty

The fourth hypothesis explores the mediating role of Customer Satisfaction in the relationship between FinTech Adoption and Customer Loyalty. This hypothesis is grounded in both Expectancy-Disconfirmation Theory (EDT) and Relationship Marketing Theory. EDT explains how positive disconfirmation leads to increased Customer Satisfaction, while Relationship Marketing Theory posits that satisfied customers are more likely to remain loyal. By applying these theories, it is possible to assess how FinTech Adoption enhances Customer Satisfaction, which subsequently boosts Customer Loyalty.

Figure 3-4. Hypothesis 4 - Customer Satisfaction as a Mediator between FinTech Adoption and Customer Loyalty

3.3.5. Demographics on FinTech Adoption, Customer Satisfaction, and Loyalty

The final hypothesis examines how demographic factors such as gender, age, income, and education level influence the relationships between FinTech Adoption, Customer Satisfaction, and loyalty. This hypothesis is grounded in the Technology Acceptance Model (TAM), which suggests that perceived usefulness and ease of use of technology vary among different demographic groups. By applying TAM, it is possible to assess how demographic factors moderate the impact of FinTech Adoption on Customer Satisfaction and loyalty.

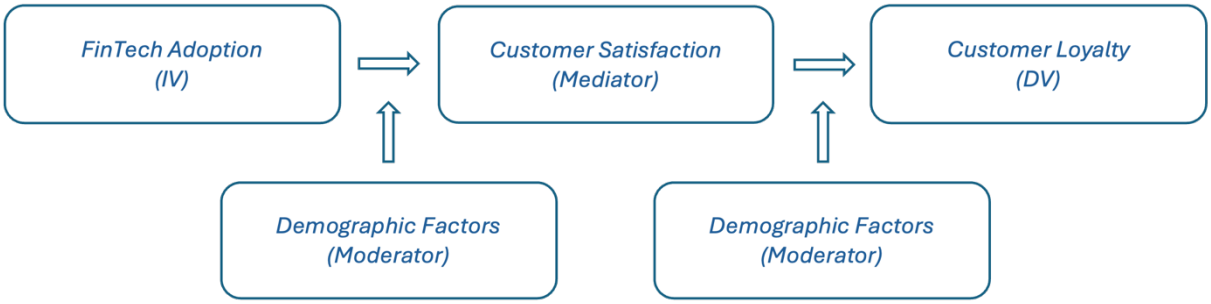

Figure 3-5. Hypothesis 5 - Influence of Demographic Factors on FinTech Adoption, Customer Satisfaction and Customer Loyalty

4. Method

This section outlines the research design, data collection methods, and analytical techniques employed to investigate the impact of FinTech Adoption on Customer Satisfaction and Customer Loyalty in the banking industry in The Netherlands. The goal is to systematically test the proposed hypothesis and provide robust evidence regarding the relationships between these variables. The following subsections describe the participants, measures, procedures, and statistical analyses used in the study.

4.1.Research design

This study employed a quantitative research design to investigate the impact of FinTech Adoption on Customer Satisfaction and Customer Loyalty within the banking sector in the Netherlands. The primary research question guiding this investigation was:

How does the Adoption of FinTech services affect Customer Satisfaction and Customer Loyalty in the banking industry in The Netherlands?

A quantitative approach was deemed appropriate for this study as it allows for the statistical analysis of relationships between variables and the drawing of generalizable conclusions based on a representative sample of the population. A quantitative research design was chosen for several reasons:

- *Measurability*
  This design allows for the quantification of variables such as FinTech Adoption, Customer Satisfaction, and Customer Loyalty. Using structured survey questions, it is possible to precisely measure the extent to which these variables interact.
- *Objectivity*
  By employing numerical data, this approach minimizes subjectivity, providing an objective basis for analysis and interpretation.
- *Generalizability*
  By collecting data from a representative sample, the findings can be generalized to the broader population of bank customers in the Netherlands, enhancing the relevance and applicability of the results.

4.2.Selection

The target population for this study consisted of students currently enrolled at the University of Twente. This demographic was strategically chosen due to their presumed familiarity with FinTech services, given their technical education background. This familiarity was expected to result in more informed and nuanced responses regarding the use and impact of FinTech services. The selection was conducted using the Test Subject Pool BMS to maximize the response rate and ensure extensive participation from

the target population. This method provided access to a diverse group of students, ensuring a representative sample for the study.

4.3.Sample

The scope of the population under investigation encompassed all students currently enrolled at the University of Twente, totaling 12,495 individuals as of 2022[1]. To ensure a representative sample, the optimal sample size was determined using the following sample size formula specifically tailored for finite populations, with a confidence level set at 95% (B. Baarda, 2014).

$$n \geq \frac{N \cdot z^2 \cdot p(1-p)}{z^2 \cdot p(1-p) + (N-1) \cdot F^2}$$

The computation resulted in a target sample size of approximately 373 respondents. The sample characteristics, including age, gender, education level, and familiarity with FinTech services, were compared with the broader student population to ensure representativeness.

4.4.Measurement

A comprehensive questionnaire was developed to collect data on FinTech Adoption, Customer Satisfaction, and Customer Loyalty, as well as demographic information. The questionnaire was divided into several sections:

- *FinTech Adoption*
  Questions on the use of specific FinTech services (e.g., mobile banking, contactless payments) and the frequency of use.
- *Customer Satisfaction*
  Questions related to satisfaction with various FinTech services and the overall digital banking experience, using a Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied).
- *Customer Loyalty*
  Questions about loyalty to the current bank, willingness to recommend the bank, and intention to stay with the current bank, using a Likert scale ranging from 1 (very disloyal) to 5 (very loyal).
- *Demographic*
  Questions on age, gender, education level, and income.

The questionnaire underwent a pilot study to ensure clarity and comprehensibility of the questions and to validate the reliability and validity of the measurement instruments.

[1] https://www.utwente.nl/organisatie/feiten-en-cijfers/historie/

4.5.Data collection

Data for this study were collected through an online survey administered via Qualtrics[2]. This platform was selected due to its existing collaboration with the University of Twente, which allowed access through a university license. This selection provided several benefits: Qualtrics offers a professional and reliable interface for respondents, ensures well-organized results, and facilitates seamless data export to SPSS for subsequent analysis. The data collection took place over a specific two-month period from May to June 2024. This timeframe was chosen to allow sufficient time for sending survey invitations, receiving responses, and conducting follow-up communications with potential respondents.

The following steps were meticulously pursued to ensure an accurate data collection process:

- *Development of the questionnaire*

  A comprehensive questionnaire was designed to gather data on FinTech Adoption, Customer Satisfaction, and Customer Loyalty, in addition to demographic information. The questionnaire underwent a pilot study to test for clarity and comprehensibility of the questions, as well as to validate the reliability and validity of the measurement instruments.
- *Distribution of the survey*

  The online survey was disseminated via Qualtrics using the Test Subject Pool BMS. This method was chosen to maximize the response rate and ensure extensive participation from the target population. Various channels were utilized to reach the target sample size, including professional networks and social media platforms. Calls to participate in the survey were posted on social media channels to encourage students from the University of Twente to complete the survey.
- *Follow-up with non-respondents*

  Periodic updates were posted on social media to remind potential respondents about the survey and to encourage their participation.
- *Collection and storage of data*

  The collected data were automatically stored in a secure online database on Qualtrics to ensure the integrity and confidentiality of the responses. Upon the conclusion of the survey period, the data were exported to SPSS for further analysis.
- *Data cleaning and preparation*

  The raw data were meticulously checked for inconsistencies and missing values. Responses with incomplete or inconsistent answers were excluded from the dataset to maintain the accuracy of the analysis. The data were then coded and prepared for statistical analysis in SPSS, including the creation of variables and assignment of numerical codes to categorical responses.

[2] https://www.qualtrics.com/nl/

By adhering to this systematic approach and utilizing the capabilities of Qualtrics, reliable and valuable data were collected, enabling a comprehensive examination of the impact of FinTech Adoption on Customer Satisfaction and loyalty within the banking sector in the Netherlands.

4.6.Data analysis

To analyze the hypotheses mentioned, SPSS was employed to determine whether to accept or reject the null hypothesis (H0).

4.6.1. Impact of FinTech Adoption on Customer Satisfaction

The purpose of hypothesis one is to examine the relationship between FinTech Adoption and Customer Satisfaction. FinTech Adoption is considered as the independent variable, and Customer Satisfaction as the dependent variable. Additionally, demographic control variables are included to determine if these variables affect the relationship. Two models were constructed for this regression analysis. Model 1 includes FinTech Adoption as the predictor and model 2 includes FinTech Adoption and demographic control variables (gender, age, education, income) as predictors. To ensure the validity of the statistical analyses, the following assumptions were assessed using graphical methods, statistical tests, and diagnostic statistics: normality of residuals, homoscedasticity, linear relationship, independence of residues and multicollinearity.

By following these steps, the analysis aimed to establish a valid and reliable understanding of the relationship between FinTech Adoption and Customer Satisfaction while considering the impact of demographic control variables.

4.6.2. Impact of FinTech Adoption on Customer Loyalty

The purpose of hypothesis two is to examine the relationship between FinTech Adoption and Customer Loyalty. FinTech Adoption is considered as the independent variable, and Customer Loyalty as the dependent variable. Additionally, demographic control variables are included to determine if these variables affect the relationship. Two models were constructed for this regression analysis. Model 1 includes only FinTech Adoption as the predictor and model 2 includes FinTech Adoption and demographic control variables (gender, age, education, income) as predictors. To ensure the validity of the statistical analyses, the following assumptions were assessed using graphical methods, statistical tests, and diagnostic statistics: normality of residuals, homoscedasticity, linear relationship, independence of residues and multicollinearity.

By following these steps, the analysis aimed to establish a valid and reliable understanding of the relationship between FinTech Adoption and Customer Loyalty, considering the impact of demographic control variables.

4.6.3. Differential Effect of FinTech Service Types on Customer Satisfaction

The purpose of hypothesis three is to investigate how various types of FinTech services influence the Customer Satisfaction. In this study, Customer Satisfaction is considered as the dependent variable, while different FinTech service types are the independent variables. A multiple linear regression analysis was conducted to examine the relationship between the types of FinTech services and Customer Satisfaction. This analysis helps to determine the predictive power of various FinTech service types on Customer Satisfaction. Two models were constructed for the analysis. Model 1 includes only the different types of FinTech services as predictors. Model 2 includes the different types of FinTech services and demographic control variables (gender, age, education, income) as predictors. To ensure the validity of the statistical analyses, the following assumptions were assessed using graphical methods, statistical tests, and diagnostic statistics: normality of residuals, homoscedasticity, linear relationship, independence of residues and multicollinearity.

By following these steps, the analysis aimed to establish a valid and reliable understanding of the relationship between different types of FinTech services and Customer Satisfaction, considering the impact of demographic control variables.

4.6.4. Mediation Effect of Customer Satisfaction on FinTech Adoption and Loyalty

The purpose of hypothesis four is to examine whether Customer Satisfaction mediates the relationship between FinTech Adoption and Customer Loyalty. The aim is to determine whether Customer Satisfaction acts as an intermediary variable influencing how FinTech Adoption affects Customer Loyalty. A Mediation Analysis was conducted using the PROCESS macro for SPSS, developed by A.F. Hayes (2022). This analysis helps in understanding the indirect effect of FinTech Adoption on Customer Loyalty through the mediating variable, Customer Satisfaction.

The mediation model was structured as follows:

- X (Independent Variable): FinTech Adoption
- M (Mediator Variable): Customer Satisfaction
- Y (Dependent Variable): Customer Loyalty
- Control Variables: Gender, Age, Education, Income

To ensure the validity of the statistical analyses, the following assumptions were assessed using graphical methods, statistical tests, and diagnostic statistics: normality of residuals, homoscedasticity, linear relationship, independence of residues and multicollinearity.

The following steps were conducted in the Mediation Analysis:

- *Direct Effect*

  The direct effect represents the relationship between the independent variable (FinTech Adoption) and the dependent variable (Customer Loyalty) without considering the mediator (Customer Satisfaction). This direct effect was calculated by regressing Customer Loyalty on FinTech Adoption, while controlling for demographic variables (Gender, Age, Education, Income). The direct effect provides insight into whether FinTech Adoption alone significantly predicts Customer Loyalty.
- *Indirect Effect*

  The indirect effect measures the extent to which the independent variable (FinTech Adoption) influences the dependent variable (Customer Loyalty) through the mediator (Customer Satisfaction). This involves two regression steps: Path a and Path b. Path a is a regression of Customer Satisfaction on FinTech Adoption, while controlling for the demographic variables. Path b is a regression of Customer Loyalty on Customer Satisfaction, while also including FinTech Adoption and controlling for demographic variables. The product of these two paths (a * b) gives the indirect effect. The bootstrapping method with 5000 samples was used to estimate the confidence intervals for the indirect effect. Bootstrapping is a robust statistical method that does not rely on normality assumptions, making it ideal for mediation analysis.
- *Total Effect*

  The total effect is the combined influence of both the direct and indirect effects of FinTech Adoption on Customer Loyalty. It is calculated by summing the direct effect (c') and the indirect effect (a * b). This total effect provides a comprehensive view of how FinTech Adoption impacts Customer Loyalty, considering both the direct pathway and the pathway through Customer Satisfaction.

By following these steps, the analysis aimed to establish a valid and reliable understanding of the mediation effect of Customer Satisfaction on the relationship between FinTech Adoption and Customer Loyalty, considering the impact of demographic control variables.

4.6.5. Demographics on FinTech Adoption, satisfaction, and Loyalty

Hypothesis five examines how demographic factors (gender, age, income, education) influence the relationship between FinTech Adoption, Customer Satisfaction, and Customer Loyalty. A multiple regression analysis was conducted to determine the effect of these demographic variables and their interactions with FinTech Adoption on Customer Satisfaction and loyalty. Two regression models were developed. Model 1 includes the main effects of FinTech Adoption and demographic variables and model 2 includes the main effects and interaction terms between FinTech Adoption and demographic variables. The dependent variables were Customer Satisfaction and Customer Loyalty.

The demographic variables (age, income, education) were centered before including them in the regression models. Centering involves subtracting the mean of each demographic variable from the individual values, which results in a new variable with a mean of zero. This was done for several reasons:

- *Reducing Multicollinearity*

  Centering helps to reduce multicollinearity, especially when interaction terms are included in the model. Multicollinearity can inflate the standard errors of the coefficients, making it difficult to assess the individual effect of each predictor. By centering the variables, the correlations among the predictors are reduced, leading to more stable and interpretable estimates.
- *Interpretability of the Coefficients*

  Centering improves the interpretability of the regression coefficients. In a model with interaction terms, the coefficients of the main effects can be interpreted as the effect of the predictor when the other interacting variable is at its mean (zero after centering). This makes the interpretation of the interaction effects more meaningful and easier to understand.
- *Comparability*

  Centering allows for the comparability of the effects across different variables and models. It ensures that the scale of the variables does not influence the estimated coefficients, providing a clearer picture of the relative importance of each predictor.

By centering the demographic variables, the accuracy and clarity of the regression analysis are improved, ensuring that the findings are both reliable and easy to interpret.

To ensure the validity of the statistical analyses, the following assumptions were assessed using graphical methods, statistical tests, and diagnostic statistics: normality of residuals, homoscedasticity, linear relationship, independence of residues and multicollinearity**.**

5. Results

This chapter presents the findings of the study. The results are based on data collected through an online survey of students at the University of Twente. The analysis focuses on the impact of FinTech services on Customer Satisfaction and Customer Loyalty, as well as the role of demographic factors. Descriptive statistics of the sample are presented first, followed by the results of regression analyses conducted to test the research hypotheses.

5.1. Missing values

In this survey, missing values were systematically addressed to minimize bias and ensure the accuracy of the results. The initial target sample size was approximately 373 respondents. However, from the original 253 respondents, only 142 who completed the survey in full were retained. Respondents with incomplete data were excluded for the following reasons:

- *Data Integrity*
  Retaining only complete datasets ensures analyses are based on full information, reducing bias from missing data.
- *Result Reliability*
  Excluding incomplete responses enhances the accuracy and reliability of the results, preventing inconsistencies from affecting the analysis.
- *Analytical Consistency*
  Working with a complete dataset simplifies statistical analysis and eliminates the need for special methods to handle missing values.

Although the final sample size was 142 fully completed surveys, this reduction was a result of applying stringent selection criteria to uphold the integrity and reliability of the data analysis, ultimately improving the overall quality of the analytical outcomes.

Descriptive Statistics – Missing Values	*N*	*Min.*	*Max.*	*Mean*	*Std. Deviation*
Total respondents	253	0	1	0,60	0,491
Gender	185	1	2	1,52	0,501
Age	185	1	5	1,63	1,045
Education	183	1	4	1,80	0,722
Income	182	1	5	2,10	1,105
FinTech usage frequency	160	1	6	5,09	1,340
Satisfaction overall banking experience	158	1	5	4,12	0,898
Satisfaction bank's FinTech services	157	1	5	4,00	0,920
FinTech facilitation financial tasks	158	1	5	3,70	0,761
FinTech user friendliness	158	1	5	3,96	0,685

Bank loyalty	156	1	5	4,01	0,894
Satisfaction FinTech service - Mobile banking	151	1	6	4,41	1,008
Satisfaction FinTech service - Contactless payments	148	1	7	4,65	1,055
Satisfaction FinTech service - Peer-to-peer payments	148	1	7	4,59	0,982
Satisfaction FinTech service - Digital wallets	146	1	7	4,56	1,226
Satisfaction FinTech service - International transfers	147	1	7	4,98	1,407
Satisfaction FinTech service - Budgeting Tools	147	1	7	4,83	1,496
Satisfaction FinTech service - Savings accounts	147	1	7	4,21	1,294
Satisfaction FinTech service - Investments	147	1	7	4,84	1,578
Satisfaction FinTech service - Loans	147	1	7	5,05	1,445
Satisfaction FinTech service - Advanced authentication	148	1	7	4,67	1,174
Satisfaction FinTech service - Transaction monitoring	147	1	7	4,67	1,391
Satisfaction FinTech service - Security tips	148	2	7	4,76	1,353
Satisfaction FinTech service - Insurance through bank	147	2	7	5,13	1,315
Satisfaction FinTech service - Online currency exchange	148	1	7	5,10	1,446
Recommend bank	151	1	5	3,57	0,976
FinTech strengthen relationship bank	151	1	5	3,29	0,921
Importance long term relationship bank	151	1	5	3,38	0,978
Valid N (listwise)	142				

Table 5-1. Missing Values

5.2.Descriptive Statistics

This section provides an overview of key variables in our study: demographic characteristics, FinTech Adoption, Customer Satisfaction, and Customer Loyalty. Using descriptive statistics, the main features of the dataset are summarized and presented to better understand the sample composition and ensure data representativeness.

5.2.1. Descriptive Statistics – Demographic

Descriptive statistics provide an overview of the demographic characteristics of respondents who completed the survey in full. This summary is essential to understand the composition of the sample and to check that the data are representative of the broader population. Additionally, these demographic variables are utilized as control variables in subsequent analyses to account for potential confounding effects and to ensure the robustness of the results. Table 5-2 presents the frequency distributions and statistical summaries of the main demographic variables: gender, age, income and education level.

Descriptive Statistics - Demographic	*N*	*Min.*	*Max.*	*Mean*	*Std. Deviation*
Gender	142	1	2	1,50	0,502
Age	142	1	5	1,56	0,986
Education	142	1	4	1,77	0,709
Income	142	1	5	2,07	1,153
Valid N (listwise)	142	1			

Table 5-2. Demographic - Descriptive Statistics

5.2.1.1. Gender

Table 5-3 shows the descriptive statistics of the variable gender. The sample consists of a proportional distribution of men and women, with 71 respondents each, representing 50% of the total sample (n=142). This ensures a balanced representation of genders. The mean of 1.50 lies exactly between the codes for men (1) and women (2), confirming the equal distribution between genders. The standard deviation of 0.502 is a low value. This indicates that there is little variation in the gender distribution, which makes sense given the equality of the groups.

Gender		*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	*1*	71	50,0	50,0	50,0
	2	71	50,0	50,0	100,0
	Total	142	100,0	100,0	

Table 5-3. Demographic – Gender - Descriptive Statistics

5.2.1.2. Age

The age distribution in Table 5-4 shows that the majority of respondents are younger, with 65.5% in the 18-25 age group. The other age groups are also represented, but in much smaller numbers. The mean of 1.56 is close to the youngest age group (18-25 years), reflecting the overrepresentation of this group in the sample. The standard deviation of 0.986 is relatively low and indicates limited spread in the age groups, indicating that most respondents are young.

Age		*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	*18-25 years old*	93	65,5	65,5	65,5
	26-34 years old	35	24,6	24,6	90,1
	35-44 years old	3	2,1	2,1	92,3
	45-54 years old	6	4,2	4,2	96,5
	55-64 years old	5	3,5	3,5	100,0
	Total	142	100,0	100,0	

Table 5-4. Demographic – Age - Descriptive Statistics

5.2.1.3. Income

The income distribution among respondents in Table 5-5 shows that a large proportion have an income of less than €50,000 per year. The mean of 2.07 lies between the second and third categories, indicating that incomes are distributed, with a slight emphasis on the lower income groups. The standard deviation of 1.153 shows that there is some variation in the income distribution, although most respondents are in the lower income categories. It is important to note that while the majority of respondents fall within lower income brackets, there are some students who earn more than €100,000 annually. This can be attributed to several factors. Some students may be engaged in highly rewarding work, involved in entrepreneurial ventures, or come from affluent backgrounds with significant financial support. Additionally, students pursuing advanced degrees in high-paying fields may also contribute to this higher income category. These factors highlight that, despite the predominance of lower income levels among respondents, there are notable exceptions that reflect a diverse range of financial circumstances among students.

Income		*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	*Less than €25,000*	53	37,3	37,3	37,3
	€25,000 - €49,999	52	36,6	36,6	73,9
	€50,000 - €74,999	21	14,8	14,8	88,7
	€75,000 - €99,999	6	4,2	4,2	93,0

	€100,000 or more	10	7,0	7,0	100,0
	Total	142	100,0	100,0	

Table 5-5. Demographic – Income - Descriptive Statistics

5.2.1.4. Education

The education distribution in Table 5-6 shows that the majority of respondents have a bachelor's degree (47.2%), followed by those with secondary education (38.0%). The mean of 1.77 is close to the bachelor level, indicating that this education category is dominant in the sample. The standard deviation of 0.709 indicates moderate variation in education levels, with most respondents falling in the middle and bachelor categories.

Education		*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	*Secondary education*	54	38,0	38,0	38,0
	Bachelor	67	47,2	47,2	85,2
	Master	20	14,1	14,1	99,3
	Doctor of Philosophy (PhD)	1	0,7	0,7	100,0
	Total	142	100,0	100,0	

Table 5-6. Demographic - Education - Descriptive Statistics

5.2.2. Descriptive Statistics – FinTech Adoption

The FinTech Adoption variable is constructed from multiple questions measuring the level of use of various FinTech services. This variable provides a summary score indicating how intensively respondents use FinTech solutions. The purpose of this measurement is to understand the level of FinTech Adoption among respondents and how this varies within the sample. Table 5-7 shows the frequency distribution of FinTech Adoption scores, which range from 1 to 12.

FinTech Adoption		*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	*1*	3	2,1	2,1	2,1
	2	2	1,4	1,4	3,5
	3	16	11,3	11,3	14,8
	4	19	13,4	13,4	28,2
	5	28	19,7	19,7	47,9
	6	27	19,0	19,0	66,9
	7	16	11,3	11,3	78,2
	8	11	7,7	7,7	85,9

9	5	3,5	3,5	89,4
10	8	5,6	5,6	95,1
11	6	4,2	4,2	99,3
12	1	0,7	0,7	100,0
Total	142	100,0	100,0	

Table 5-7. FinTech Adoption - Descriptive Statistics

The FinTech Adoption variable was compiled based on responses to several questions measuring the use of various FinTech services. These questions are attached and include the following services: mobile banking services, contactless payments, peer-to-peer payments, digital wallets, international transfers, budgeting and money management tools, savings accounts, investment services, loans, advanced authentication, transaction monitoring, security tips, insurance through the bank, online currency exchange and the use of other specified FinTech services. These questions were answered with 0 = no use and 1 = do use. By aggregating these scores, the FinTech Adoption score was calculated, giving a holistic picture of FinTech Adoption among respondents. The variation in scores and the spread indicate that while some respondents are very active users of FinTech services, others have only minimally adopted these technologies. This insight is crucial for understanding Adoption patterns and can provide valuable information for future analysis and policy recommendations. Figure 5-1 visualizes the distribution of scores, with a normal distribution consulted to highlight dispersion and central tendency.

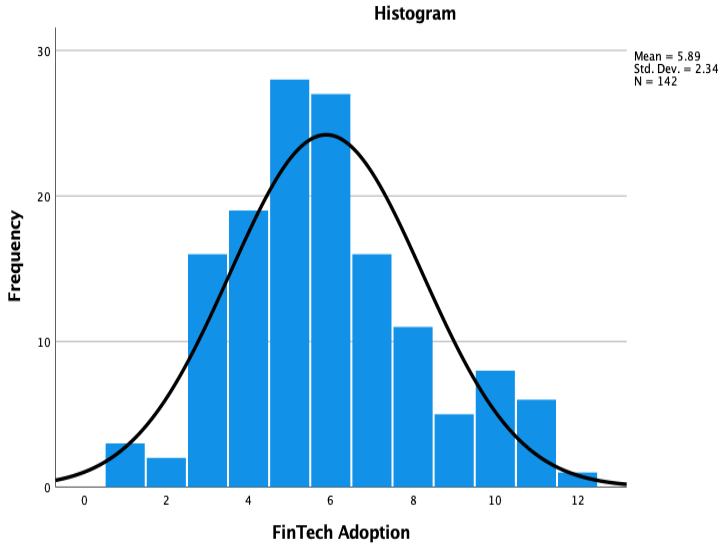

Figure 5-1. FinTech Adoption Frequency – Histogram

Table 5-8 shows the descriptive statistics of the variable FinTech Adoption. The mean of 5.89 indicates that the average respondent uses FinTech services to a moderate extent, with the score being close to the middle of the scale. The standard deviation of 2.34 indicates that there is a reasonable spread in the

degree of FinTech usage, suggesting that respondents show considerable variation in their Adoption of FinTech services.

Descriptive Statistics – FinTech Adoption	*N*	*Min.*	*Max.*	*Mean*	*Std. Deviation*
FinTech Adoption	142	1	12	5,89	2,340
Valid N (listwise)	142				

Table 5-8. FinTech Adoption - Descriptive Statistics

Table 5-9 shows that there is a significant positive correlation between the frequency of FinTech use and the number of different FinTech services used, with a Pearson correlation coefficient of .294 ($p < .01$). A correlation coefficient of 0.294 indicates a weak to moderate, but statistically significant, positive relationship between FinTech Adoption and FinTech usage frequency. This suggests that respondents who use more different FinTech services also use these services more frequently.

Correlations - FinTech Adoption		*FinTech Adoption*	*FinTech Usage Frequency*
FinTech Adoption	*Pearson Correlation*	1	.294**
	Sig. (2-tailed)		0,000
	N	142	142
FinTech Usage Frequency	*Pearson Correlation*	.294**	1
	Sig. (2-tailed)	0,000	
	N	142	142

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

Table 5-9. FinTech Adoption - Correlation FinTech Adoption x FinTech Usage Frequency

5.2.3. Descriptive Statistics – Customer Satisfaction

This section provides a detailed analysis of Customer Satisfaction regarding various aspects of the services offered by banks. The purpose of this analysis is to understand how customers rate their bank's overall digital banking experience and the specific FinTech services. The analysis focuses on two specific dimensions of Customer Satisfaction:

- *Customer Satisfaction Overall*

  This aspect examines customers' overall satisfaction with their digital banking experience. This section evaluates satisfaction with the bank's FinTech services more broadly. This includes the overall effectiveness and usability of FinTech solutions implemented by the bank.

- *Customer Satisfaction FinTech*

  This part of the analysis focuses on Customer Satisfaction with specific FinTech services offered by their bank.

5.2.3.1. Customer Satisfaction Overall

The variable Customer Satisfaction Overall is constructed based on the following questions:

1. How satisfied are you with the overall digital banking experience offered by your bank?

   This question focuses on customers' overall satisfaction with the digital banking experience offered by their bank.
2. How satisfied are you with your bank's FinTech services?

   This asks specifically about satisfaction with the bank's FinTech services. This can include innovative financial technologies such as robo-advice, digital loans and mobile payments.
3. How would you rate the extent to which FinTech services facilitate or improve your financial tasks?

   This question assesses to what extent FinTech services facilitate or improve customers' financial tasks. This could include, for example, efficiency in tracking expenses, budgeting and investment management.
4. How do you rate the user-friendliness of FinTech services?

   Finally, the user-friendliness of FinTech services is evaluated. This is a crucial factor because even the most advanced technologies can be ineffective if they are not user-friendly.

Respondents rated satisfaction on a scale from 1 (very dissatisfied) to 5 (very satisfied). The frequency distribution of satisfaction scores ranges from 1.75 to 5.00. Table 5-10 shows that most respondents (24.6%) rated a 4, followed by 4.25 (15.5%) and 4.50 (15.5%).

Customer Satisfaction Overall		*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	*1.75*	1	0,7	0,7	0,7
	2.00	2	1,4	1,4	2,1
	2.25	1	0,7	0,7	2,8
	2.50	2	1,4	1,4	4,2
	2.75	2	1,4	1,4	5,6
	3.00	5	3,5	3,5	9,2
	3.25	10	7,0	7,0	16,2
	3.50	10	7,0	7,0	23,2
	3.75	18	12,7	12,7	35,9
	4.00	35	24,6	24,6	60,6
	4.25	22	15,5	15,5	76,1

4.50	22	15,5	15,5	91,5
4.75	9	6,3	6,3	97,9
5.00	3	2,1	2,1	100,0
Total	142	100,0	100,0	

Table 5-10. Customer Satisfaction Overall - Descriptive Statistics

Figure 5-2 visualizes the frequency distribution of satisfaction scores with an overlaid normal distribution curve. The distribution is slightly asymmetrical to the right, peaking around the score of 4. There is a clear concentration of the scores between 3,50 and 4,50, indicating that most respondents are fairly to very satisfied. The histogram confirms that there are only a few outliers at the lower end of the satisfaction scale.

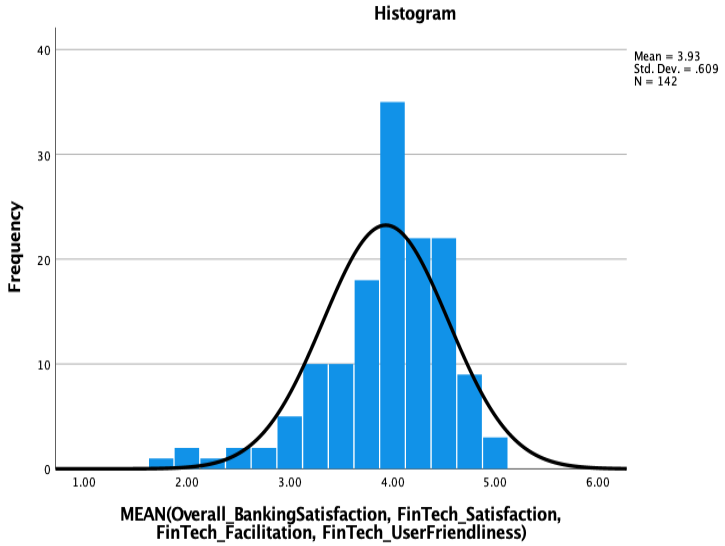

Figure 5-2. Customer Satisfaction Overall Frequency – Histogram

Table 5-11 shows the descriptive statistics of the variable Customer Satisfaction Overall. The mean indicates the average satisfaction score provided by the respondents. In this case, the mean is 3.93. This indicates that customers are generally fairly satisfied with the digital banking experience and FinTech services. The standard deviation measures the variability of satisfaction scores around the mean. A standard deviation of 0.609 indicates that most scores are close to the mean, but that there is some variability in how satisfied customers are.

Descriptive Statistics – Customer Satisfaction Overall	*N*	*Min.*	*Max.*	*Mean*	*Std. Deviation*
MEAN(Overall_BankingSatisfaction, FinTech_Satisfaction, FinTech_Facilitation, FinTech_UserFriendliness)	142	1,75	5,00	3,9349	0,60924
Valid N (listwise)	142				

Table 5-11. Customer Satisfaction Overall - Descriptive Statistics - 1

The reliability of the composite variable was measured using Cronbach's alpha. Cronbach's alpha is a measure of the internal consistency of a set of questions, and a value above 0.7 is usually considered acceptable in the social sciences. A higher value indicates a higher degree of consistency between questions. Table 5-12 shows the reliability statistics of the variable Customer Satisfaction Overall. The calculated value for Cronbach's alpha is 0.707. This result suggests that the questions have good internal consistency and are reliable in measuring overall Customer Satisfaction. This means that the questions collectively provide a consistent measurement of the concept of Customer Satisfaction.

Reliability Statistics	*Cronbach's Alpha*	*Cronbach's Alpha Based on Standardized Items*	*N of Items*
	0,706	0,707	4

Table 5-12. Customer Satisfaction Overall - Reliability Statistics

5.2.3.2. Customer Satisfaction FinTech

The variable 'Customer_Satisfaction_FinTech' was constructed based on respondents' satisfaction with various specific FinTech services offered by their bank. The services evaluated included mobile banking, contactless payments, peer-to-peer payments, digital wallets, international transfers, budgeting & money management tools, savings accounts, investments, loans, advanced authentication, transaction monitoring, security tips, insurance through bank and online currency exchange. The respondents rated their satisfaction on a scale from 1 (very dissatisfied) to 5 (very satisfied).

The analysis included 142 total cases, of which 27 (19.0%) were valid and 115 (81.0%) were excluded. The reason for the excluding is that the respondent was not familiar with the service or does not use it. Table 5-13 shows that the Cronbach's Alpha value of the Customer Satisfaction FinTech variable is 0,888. This value indicates a high level of internal consistency among the items, suggesting that the questions reliably measure the overall concept of Customer Satisfaction with FinTech services.

Reliability Statistics	*Cronbach's Alpha*	*Cronbach's Alpha Based on Standardized Items*	*N of Items*
	0,888	0,890	14

Table 5-13. Customer Satisfaction FinTech - Reliability Statistics

The overall descriptive statistics for the combined satisfaction ratings show a mean of 4.10, a standard deviation of 0.716, a minimum score of 1.17, and a maximum score of 5.00. The frequency distribution for the overall satisfaction ratings in Table 5-14 indicates that the most common satisfaction rating is

4.00, suggesting that many respondents are generally satisfied with the FinTech services. A notable percentage of respondents (11.3%) gave the highest satisfaction score of 5.00.

Item Statistics	*Mean*	*Std. Deviation*	*N*
Satisfaction FinTech service - Mobile banking	3,93	1,141	27
Satisfaction FinTech service - Contactless payments	4,19	1,039	27
Satisfaction FinTech service - Peer-to-peer payments	4,22	1,050	27
Satisfaction FinTech service - Digital wallets	4,19	1,210	27
Satisfaction FinTech service - International transfers	3,48	0,935	27
Satisfaction FinTech service - Budgeting Tools	3,56	0,974	27
Satisfaction FinTech service - Savings accounts	3,67	1,000	27
Satisfaction FinTech service - Investments	3,22	0,847	27
Satisfaction FinTech service - Loans	3,22	0,847	27
Satisfaction FinTech service - Advanced authentication	3,52	0,935	27
Satisfaction FinTech service - Transaction monitoring	3,33	0,784	27
Satisfaction FinTech service - Security tips	3,56	0,892	27
Satisfaction FinTech service - Insurance through bank	3,56	0,892	27
Satisfaction FinTech service - Online currency exchange	3,56	0,892	27

Table 5-14. Customer Satisfaction FinTech - Item Statistics

Figure 5-3 shows that the distribution is slightly right-skewed, with more respondents rating their satisfaction towards the higher end of the scale. The histogram with a superimposed normal curve demonstrates the distribution of satisfaction ratings. The mean satisfaction rating is 4.10, and the standard deviation is 0.716, indicating that the majority of respondents have a high level of satisfaction with FinTech services, although there is some variability in their responses.

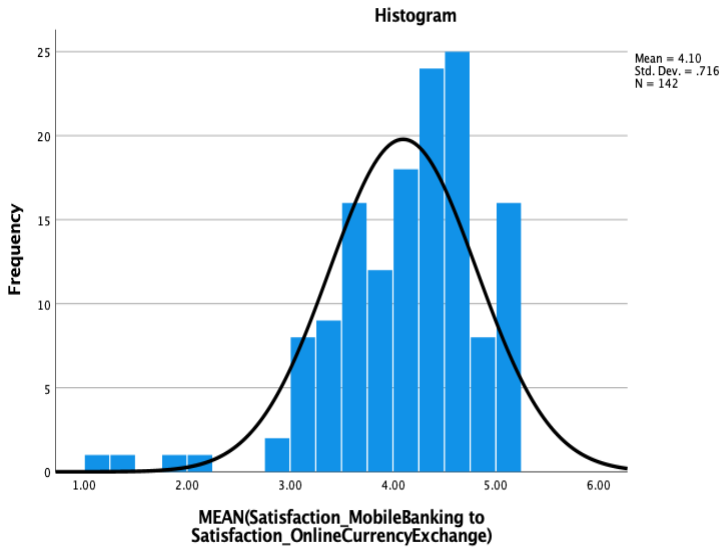

Figure 5-3. Customer Satisfaction Overall Frequency - Histogram

5.2.4. Descriptive Statistics – Customer Loyalty

The variable Customer Loyalty was constructed based on four questions measuring respondents' loyalty to their current bank. The questions were:

- How loyal are you to your current bank?
- How likely are you to recommend your bank to friends and family?
- Do you feel that using FinTech services has strengthened your relationship with your bank?
- How important is it for you to have a long-term relationship with your bank rather than just conducting one-off transactions?

The scores on these questions have been aggregated in Table 5-15 to provide a holistic picture of Customer Loyalty among respondents.

Customer Loyalty		*Frequency*	*Percent*	*Valid Percent*	*Cumulative Percent*
Valid	*1.50*	1	0,7	0,7	0,7
	1.75	1	0,7	0,7	1,4
	2.00	1	0,7	0,7	2,1
	2.25	2	1,4	1,4	3,5
	2.50	4	2,8	2,8	6,3
	2.75	12	8,5	8,5	14,8
	3.00	18	12,7	12,7	27,5
	3.25	17	12,0	12,0	39,4
	3.50	20	14,1	14,1	53,5
	3.75	15	10,6	10,6	64,1
	4.00	22	15,5	15,5	79,6
	4.50	8	5,6	5,6	96,5
	4.75	4	2,8	2,8	99,3
	5.00	1	0,7	0,7	100,0
	Total	142	100,0	100,0	

Table 5-15. Customer Loyalty - Descriptive Statistics

Table 5-16 shows the reliability of the composite variable that was evaluated using Cronbach's Alpha, which has a value of 0.652. Although this value is slightly below the generally accepted threshold of 0.7 for internal consistency, it indicates that there is reasonable consistency between the items. Removing an item does not significantly improve the alpha value, suggesting that all four questions are conceptually related and collectively provide a useful measure of Customer Loyalty.

Reliability Statistics	*Cronbach's Alpha*	*Cronbach's Alpha Based on Standardized Items*	*N of Items*
	0,652	0,650	4

Table 5-16. Customer Loyalty - Reliability Statistics

The frequency distribution of Customer Loyalty scores, range from 1.50 to 5.00. Figure 5-4 visualizes the distribution of scores, with a normal distribution consulted to highlight the dispersion and central tendency. The histogram of Customer Loyalty shows a distribution that is normal, with a peak at the score of 4.0 (somewhat loyal). The spread of scores, as illustrated by the width of the histogram, highlights the variability in loyalty among respondents.

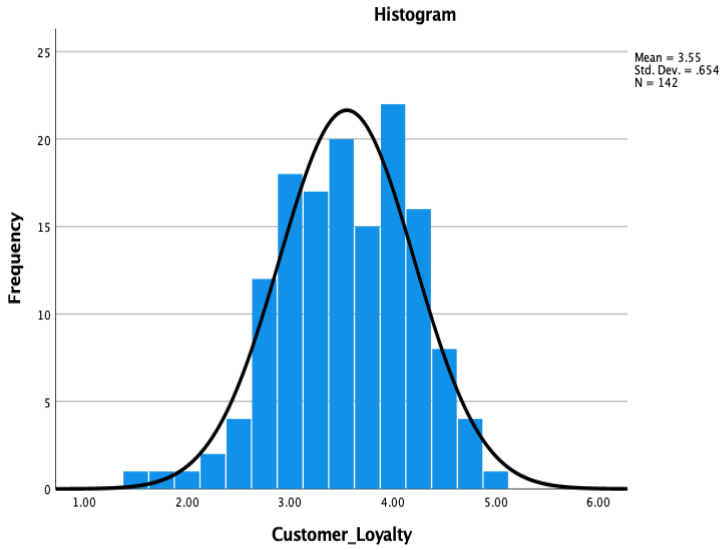

Figure 5-4. Customer Loyalty Frequency - Histogram

Table 5-17 shows the descriptive statistics of Customer Loyalty. The mean of 3.55 indicates that the average respondent has a reasonably high degree of loyalty to their bank, with the score close to 4 (somewhat loyal). The standard deviation of 0.654 indicates that there is some spread in the loyalty scores, but most respondents tend towards the positive side of the scale.

Descriptive Statistics – Customer Loyalty	*N*	*Min.*	*Max.*	*Mean*	*Std. Deviation*
Customer Loyalty	142	1,50	5,00	3,5511	0,65405

Table 5-17. Customer Loyalty - Descriptive Statistics - 1

5.3.Hypothesis 1 – Impact of FinTech Adoption on Customer Satisfaction

The purpose of this analysis is to examine the relationship between FinTech Adoption and Customer Satisfaction. Here, FinTech Adoption is considered as the independent variable and Customer Satisfaction Overall as the dependent variable. In addition, demographic control variables are added to determine if these variables affect the relationship.

5.3.1. Customer Satisfaction Overall

The purpose of this analysis is to examine the relationship between FinTech Adoption and Customer Satisfaction Overall.

5.3.1.1. Assessment of assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include normality, linearity, homoscedasticity, independence and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.3.1.1.1. Normality of Residuals

Figure 5-5 and Figure 5-6 show the histogram and the P-P plot, which help in assessing the normality of the residuals. The distribution of the residuals in the histogram appears to follow a bell-shaped curve, indicating a normal distribution. The residuals in the P-P plot are close to the diagonal, suggesting that the residuals are normally distributed.

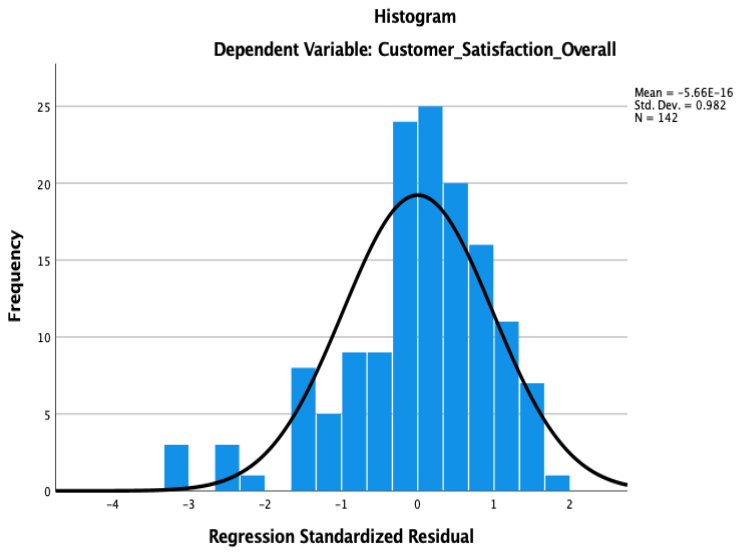

Figure 5-5. Hypothesis 1 Customer Satisfaction Overall – Assessment of Assumptions - Regression Standardized Residual - Histogram

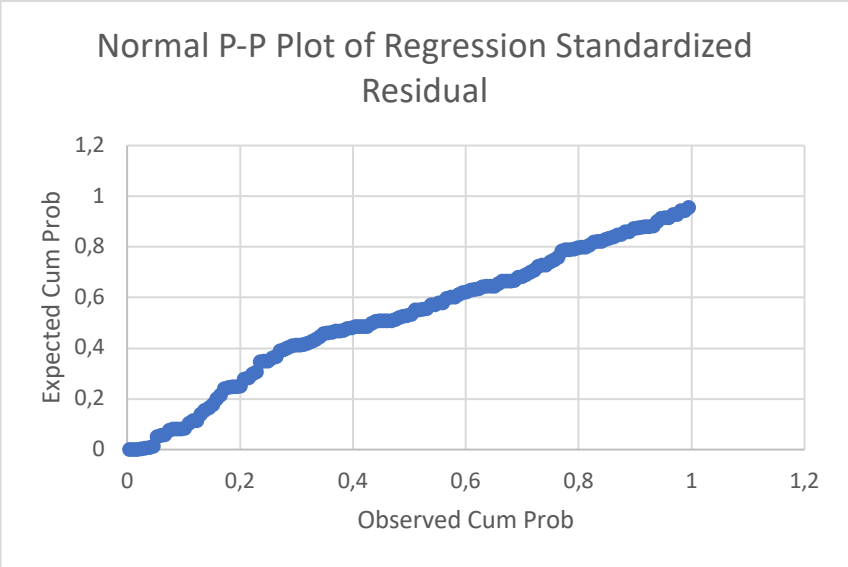

Figure 5-6. Hypothesis 1 Customer Satisfaction Overall – Assessment of Assumptions - Regression Standardized Residual - P-P Plot

5.3.1.1.2. Homoscedasticity

The assumption of homoscedasticity requires that the variance of the residuals remain constant across the values of the predictors. Figure 5-7 shows a scatterplot, indicating no clear pattern or conical distribution of the residuals. The residuals appear randomly distributed around the horizontal axis, suggesting no problem with heteroscedasticity.

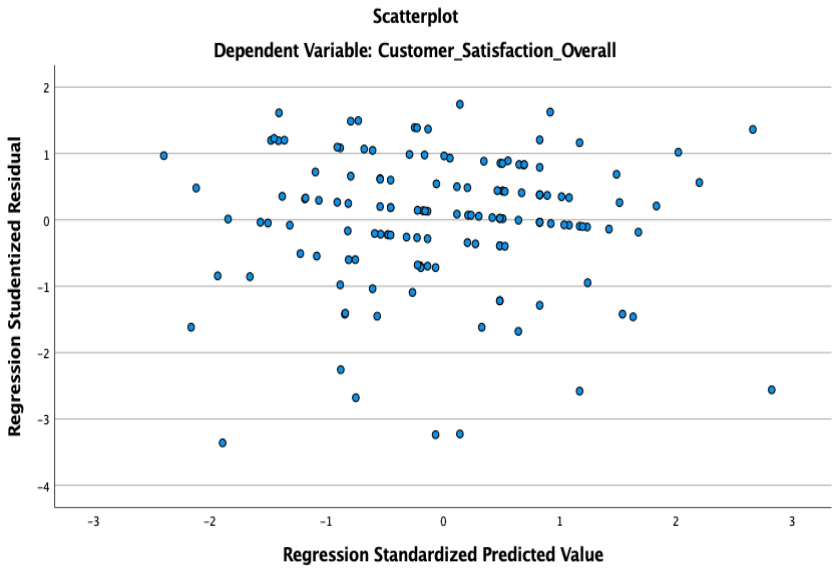

Figure 5-7. Hypothesis 1 Customer Satisfaction Overall – Assessment of Assumptions - Regression Standardized Predicted Value x Regression Studentized Residual – Scatterplot

5.3.1.1.3. Linear Relationship

The scatterplot in Figure 5-7 shows how the residuals (differences between the observed and predicted values) behave relative to the predicted values. For a linear relationship, the points should be randomly distributed with no clear patterns. In this plot, there appears to be no clear curve or systematic pattern, suggesting that the relationship between the predictors and the dependent variable is linear.

5.3.1.1.4. Independence of Residues

The residuals must be independent of each other. Table 5-18 shows that the Durbin-Watson statistic is 2.254, which is close to 2. This suggest that there is no significant autocorrelation in the residuals of the model, confirming their independence. Ensuring the independence of residuals is crucial for the validity of a linear regression analysis.

Model Summary										
					Change Statistics					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*R Square Change*	*F Change*	*df1*	*df2*	*Sig. F Change*	*Durbin-Watson*
1	.101[a]	0,010	0,003	0,60831	0,010	1,429	1	140	0,234	
2	.171[b]	0,029	-0,006	0,61117	0,019	0,674	4	136	0,611	2,254

a. Predictors: (Constant), FinTech Adoption

b. Predictors: (Constant), FinTech Adoption, Gender, Age, Education, Income

c. Dependent Variable: Customer_Satisfaction_Overall

Table 5-18. Hypothesis 1 Customer Satisfaction Overall – Assessment of Assumptions - Model Summary

5.3.1.1.5. Multicollinearity

Multicollinearity occurs when the predictors are highly correlated, reducing the stability of the estimates. Table 5-19 shows the coefficients of overall Customer Satisfaction. The tolerance values are all close to 1, and the VIF values are low, indicating that there is no multicollinearity issue.

Coefficients[a]								
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	*(Constant)*	3,781	3,781	27,274	0,000			
	FinTech Adoption	0,026	0,022	0,101	1,195	0,234	1,000	1,000

2	*(Constant)*	3,808	0,273		13,967	0,000		
	FinTech Adoption	0,036	0,023	0,137	1,545	0,125	0,904	1,106
	Gender	0,069	0,107	0,057	0,641	0,523	0,912	1,097
	Age	0,007	0,062	0,012	0,117	0,907	0,714	1,401
	Education	-0,100	0,077	-0,117	-1,312	0,192	0,900	1,111
	Income	-0,009	0,054	-0,018	-0,174	0,862	0,685	1,460

a. Dependent Variable: Customer_Satisfaction_Overall

Table 5-19. Hypothesis 1 Customer Satisfaction Overall – Assessment of Assumptions – Coefficients

5.3.1.1.6. Conclusion

The assessment of assumptions for the linear regression model on Customer Satisfaction Overall indicates that the model meets the necessary criteria for reliable and valid interpretation. The histogram and P-P plot show that the residuals are normally distributed. The scatterplot demonstrates no clear pattern or conical distribution, suggesting homoscedasticity. The linearity of the relationship between the predictors and the dependent variable is confirmed by the random distribution of residuals. The Durbin-Watson statistic close to 2 indicates no significant autocorrelation, ensuring the independence of residuals. Finally, the tolerance values and VIF values indicate no multicollinearity issues among the predictors. Overall, these results support the validity of the linear regression analysis conducted.

5.3.1.2. Results

Model 1: Without Control Variables.

The results of Model 1 in Table 5-18 shows an R^2 value of 0.010, indicating that FinTech Adoption explains only 1% of the variance in Customer Satisfaction. The Adjusted R^2 value of 0.003 indicates minimal improvement when considering the number of predictors. The F value ($F(1, 140) = 1.429$, $p = 0.234$) is not statistically significant, implying that FinTech Adoption alone is not a significant predictor of Customer Satisfaction. The coefficient for FinTech Adoption is positive ($B = 0.026$), indicating a positive relationship between FinTech Adoption and Customer Satisfaction. However, it is not statistically significant ($p = 0.234$), suggesting that the observed effect of FinTech Adoption on overall Customer Satisfaction could be due to random chance rather than a genuine underlying relationship.

Model 2: With Control variables.

The results of Model 2 in Table 5-18 include demographic variables in addition to FinTech Adoption. The R^2 value increases to 0.029, meaning that the model explains 2.9% of the variance in Customer Satisfaction. However, the Adjusted R^2 value is -0.006, suggesting that the addition of control variables

does not improve the model. The F value ($F(5, 136) = 0.674$, $p = 0.611$) is not statistically significant, indicating that the addition of demographic variables does not significantly improve the predictive power of the model. The coefficient for FinTech Adoption remains positive ($B = 0.036$) but is still not significant ($p = 0.125$). Additionally, the demographic variables gender, age, education and income do not significantly affect Customer Satisfaction.

The results of this analysis indicate that FinTech Adoption does not significantly affect Customer Satisfaction. Whether demographic control variables are included or not, FinTech Adoption does not emerge as a strong predictor. The low R^2 values suggest that the models explain only a small portion of the variance in Customer Satisfaction. Further research with additional or alternative variables is necessary to better understand the factors influencing Customer Satisfaction.

5.3.2. Customer Satisfaction FinTech

The purpose of this analysis is to examine the relationship between FinTech Adoption and Customer Satisfaction, specifically within different types of FinTech services. Here, FinTech Adoption is considered the independent variable and Customer Satisfaction by type of FinTech service is considered the dependent variable. In addition, demographic control variables are added to determine whether these variables affect the relationship.

5.3.2.1. Assessment of assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include normality, linearity, homoscedasticity, independence and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.3.2.1.1. Normality of Residuals

Figure 5-8 and Figure 5-9 show the histogram and the P-P plot, which help in assessing the normality of the residuals. The histogram of the regression standardized residuals shows a bell-shaped curve, indicating that the residuals are normally distributed. The Normal P-P plot further supports this, as the residuals closely follow the diagonal, suggesting normality.

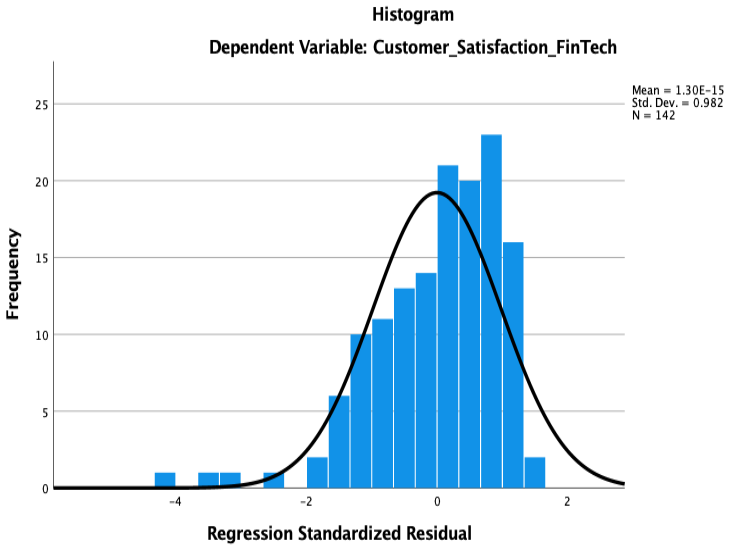

Figure 5-8. Hypothesis 1 Customer Satisfaction FinTech - Regression Standardized Residual - Histogram

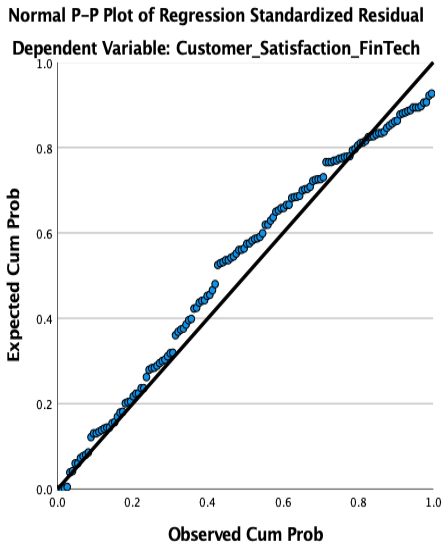

Figure 5-9. Hypothesis 1 Customer Satisfaction FinTech - Regression Standardized Residual - P-P Plot

5.3.2.1.2. Homoscedasticity

Figure 5-10 shows a scatterplot of the regression-studentized residuals against the standardized predicted values, displaying a random distribution of points with no clear patterns. This suggests that the variance of the residuals is constant.

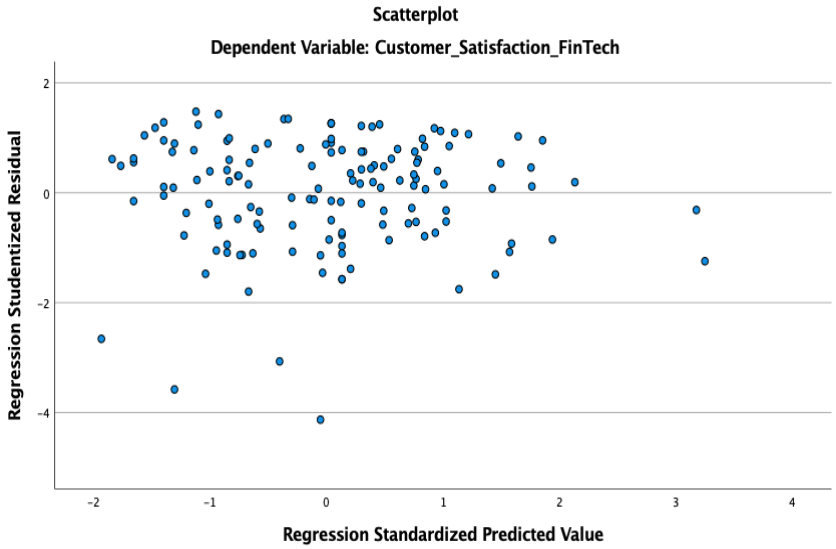

Figure 5-10. Hypothesis 1 Customer Satisfaction FinTech - Regression Standardized Predicted Value x Regression Studentized Residual – Scatterplot

5.3.2.1.3. Linear Relationship

The scatterplot in Figure 5-10 shows the regression standardized predicted values against the regression studentized residuals for Customer Satisfaction with FinTech services. The absence of distinct nonlinear patterns, such as curves or clusters, indicates a linear relationship between the independent variables (e.g., FinTech Adoption and demographics) and the dependent variable (Customer Satisfaction).

5.3.2.1.4. Independence of Residues

Table 5-20 presents the model summary for the variable Customer Satisfaction FinTech. The Durbin-Watson value is 2,000, which is very close to 2, indicating that the residuals are independent.

Model Summary										
					Change Statistics					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*R Square Change*	*F Change*	*df1*	*df2*	*Sig. F Change*	*Durbin-Watson*
1	.026[a]	0,001	-0,006	0,71800	0,001	0,096	1	140	0,757	
2	.174[b]	0,030	-0,005	0,71757	0,030	1,042	4	136	0,388	2,000

a. Predictors: (Constant), FinTech Adoption

b. Predictors: (Constant), FinTech Adoption, Gender, Age, Education, Income

c. Dependent Variable: Customer_Satisfaction_FinTech

Table 5-20. Hypothesis 1 Customer Satisfaction FinTech - Model Summary

5.3.2.1.5. Multicollinearity

Table 5-21 shows the coefficients of the variable Customer Satisfaction FinTech. The VIF values for the independent variables range from 1,000 to 1,460, all well below 10. This indicates that there is no significant multicollinearity among the independent variables.

Coefficient a								
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	*(Constant)*	4,146	0,164		25,340	0,000		
	FinTech Adoption	-0,008	0,026	-0,026	-0,311	0,757	1,000	1,000
2	*(Constant)*	3,647	0,320		11,395	0,000		
	FinTech Adoption	-0,012	0,027	-0,038	-0,424	0,672	0,904	1,106
	Gender	0,200	0,126	0,140	1,586	0,115	0,912	1,097
	Age	0,014	0,073	0,019	0,191	0,849	0,714	1,401
	Education	0,032	0,090	0,032	0,359	0,720	0,900	1,111
	Income	0,068	0,063	0,109	1,070	0,287	0,685	1,460

a. Dependent Variable: Customer_Satisfaction_FinTech

Table 5-21. Hypothesis 1 Customer Satisfaction FinTech – Coefficients

5.3.2.1.6. Conclusion

The assessment of assumptions for the linear regression model on Customer Satisfaction with FinTech indicates that the model meets the necessary criteria for reliable and valid interpretation. The histogram and P-P plot show that the residuals are approximately normally distributed. The histogram displays a bell-shaped curve, and the P-P plot shows that the residuals closely follow the diagonal, both suggesting normality. The scatterplot demonstrates a random distribution of points, indicating homoscedasticity and suggesting that the variance of the residuals is constant across all levels of predicted values. This scatterplot also confirms the linearity assumption, as there are no distinct nonlinear patterns, such as curves or clusters. The Durbin-Watson statistic of 2.000, indicates no significant autocorrelation in the residuals, ensuring their independence. Finally, the Variance Inflation Factor (VIF) values range from 1.000 to 1.460, all well below 10, indicating that multicollinearity is not a significant issue. Overall, these assessments support the validity of the linear regression analysis conducted on Customer Satisfaction with FinTech.

5.3.2.2. Results

Model 1: Without Control Variables.

The results of Model 1 in Table 5-20 shows an R^2 value of 0.001, indicating that FinTech Adoption explains only 0.1% of the variance in Customer Satisfaction. The Adjusted R^2 value of -0.006 suggest no improvement when considering the number of predictors. The F value ($F(1, 140) = 0.096$, $p = 0.757$) is not statistically significant, implying that FinTech Adoption alone is not a significant predictor of Customer Satisfaction. The coefficient for FinTech Adoption in Table 5-21 is negative ($B = -0.008$), but not significant ($p = 0.757$), indicating that the observed effect could be due to random chance rather than a true relationship.

Model 2: With Control Variables.

The results of Model 2 in Table 5-20 include demographic variables in addition to FinTech Adoption. The R^2 value increases to 0.030, meaning that the model explains 3% of the variance in Customer Satisfaction. However, the Adjusted R^2 value is -0.005, indicating that the addition of control variables does not improve the model. The F value ($F(5, 136) = 0.853$, $p = 0.515$) is not statistically significant, suggesting that the addition of demographic variables does not significantly enhance the predictive power of the model. The coefficient for FinTech Adoption in Table 5-21 remains negative ($B = -0.012$) and is still not significant ($p = 0.672$). Additionally, the demographic variables gender, age, education and income do not significantly affect Customer Satisfaction.

The results of this analysis indicate that FinTech Adoption does not significantly affect Customer Satisfaction. Both with and without the addition of demographic control variables, FinTech Adoption does emerge as a strong predictor of Customer Satisfaction FinTech. The low R^2 values suggest that the models can explain only a small portion of the variance in Customer Satisfaction.

5.4.Hypothesis 2 – Impact of FinTech Adoption on Customer Loyalty

For the analysis of hypothesis two, the impact of FinTech Adoption on Customer Loyalty was investigated. A linear regression analysis was conducted with Customer Loyalty as the dependent variable and the level of FinTech Adoption as the independent variable. This approach determined whether higher levels of FinTech Adoption are associated with increased Customer Loyalty. Demographic control variables were included to assess their influence on this relationship.

5.4.1. Assessment of assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include normality, linearity, homoscedasticity, independence and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.4.1.1. Normality of Residuals

Figure 5-11 and Figure 5-12 show the Normal P-P Plot of regression standardized residual, where the points lie reasonably close to the diagonal line, suggesting that the residuals are approximately normally distributed. Additionally, the histogram of regression standardized residual displays a roughly bell-shaped distribution, further indicating that the residuals are normally distributed.

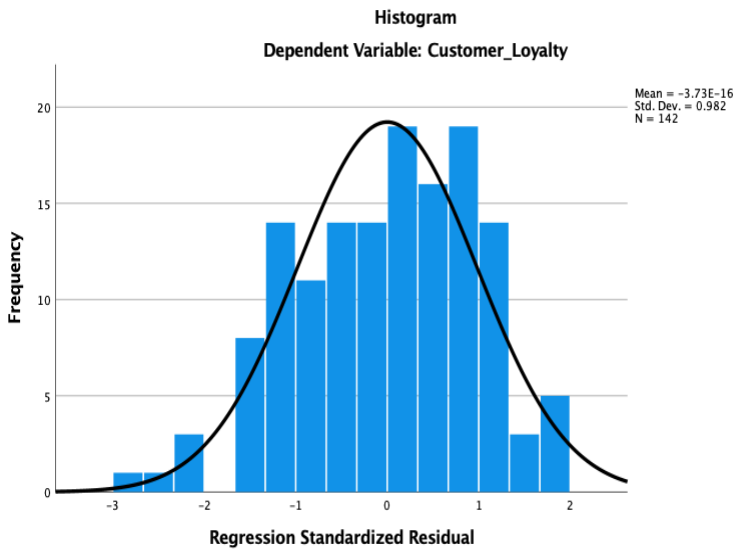

Figure 5-11. Hypothesis 2 Customer Loyalty - Regression Standardized Residual - Histogram

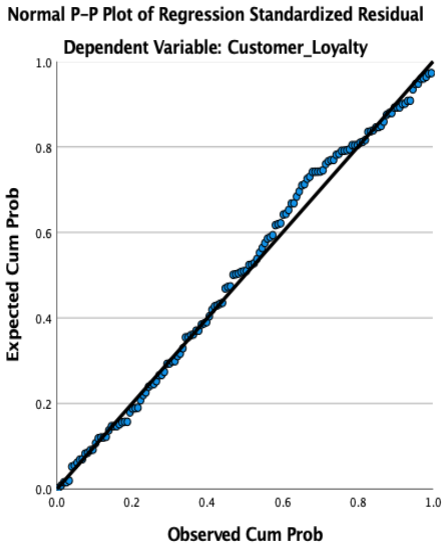

Figure 5-12. Hypothesis 2 Customer Loyalty - Regression Standardized Residual - P-P Plot

5.4.1.2. Homoscedasticity

Figure 5-13 shows the scatterplot of the regression standardized residuals against the standardized predicted values. The points are randomly scattered around the horizontal line without any clear pattern, indicating homoscedasticity. This suggests that the variance of the residuals is constant across all levels of the predicted values, fulfilling a key assumption in regression analysis. This ensures that the model's predictions are consistently reliable and that the error terms are uniformly distributed.

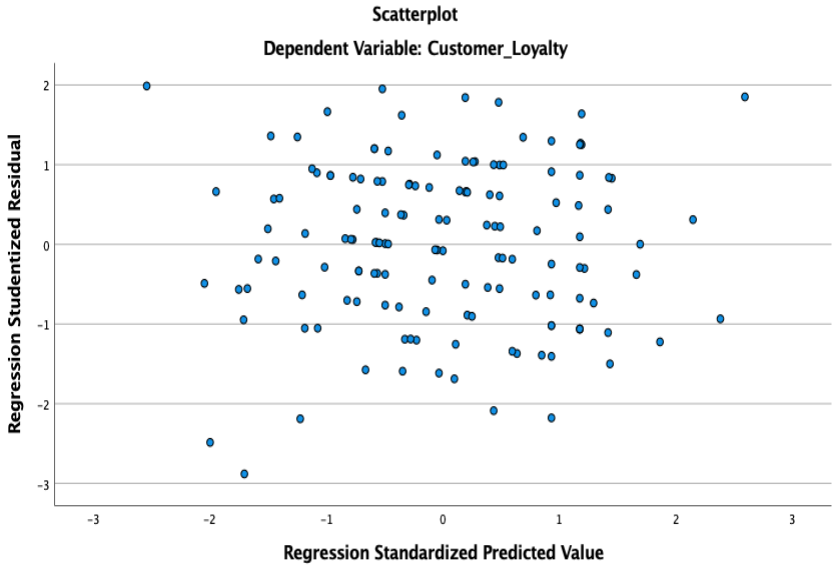

Figure 5-13. Hypothesis 2 Customer Loyalty - Regression Standardized Predicted Value x Regression Studentized Residual - Scatterplot

5.4.1.3. Linear Relationship

Figure 5-13 lacks a distinct pattern, indicating that the linearity assumption is satisfied. This implies that the relationship between the independent variable (FinTech Adoption) and the dependent variable (Customer Loyalty) is linear.

5.4.1.4. Independence of Residues

Table 5-22 shows a Durbin-Watson Statistic value of 1.847, which is close to 2, suggesting that there is no significant autocorrelation in the residuals. This indicates that the residuals are independent.

Model Summary										
					Change Statistics					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*R Square Change*	*F Change*	*df1*	*df2*	*Sig. F Change*	*Durbin-Watson*
1	.055[a]	0,003	-0,004	0,65540	0,003	0,421	1	140	0,518	
2	.178[b]	0,032	-0,004	0,65532	0,029	1,008	4	136	0,405	1,847

a. Predictors: (Constant), FinTech Adoption

b. Predictors: (Constant), FinTech Adoption, Gender, Age, Education, Income

c. Dependent Variable: Customer_Loyalty

Table 5-22. Hypothesis 2 Customer Loyalty - Model Summary

5.4.1.5. Multicollinearity

Table 5-23 shows that the Variance Inflation Factor (VIF) values for all variables are below 10, with the highest being 1.460 for income, indicating that multicollinearity is not a concern in this model. Furthermore, the Collinearity Diagnostics show that the Condition Index values are mostly below 15, suggesting that multicollinearity is not a significant issue.

Coefficients[a]								
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	*(Constant)*	3,461	0,149		23,173	0,000		
	FinTech Adoption	0,015	0,024	0,055	0,649	0,518	1,000	1,000
2	*(Constant)*	3,453	0,292		11,813	0,000		

FinTech Adoption	0,028	0,025	0,101	1,141	0,256	0,904	1,106
Gender	0,108	0,115	0,083	0,942	0,348	0,912	1,097
Age	0,017	0,066	0,025	0,252	0,802	0,714	1,401
Education	-0,114	0,082	-0,124	-1,392	0,166	0,900	1,111
Income	-0,026	0,058	-0,047	-0,456	0,649	0,685	1,460

a. Dependent Variable: Customer_Loyalty

Table 5-23. Hypothesis 2 Customer Loyalty – Coefficients

5.4.1.6. Conclusion

The assessment of assumptions for the linear regression model on Customer Loyalty indicates that the model meets the necessary criteria for reliable and valid interpretation. The histogram and P-P plot show that the residuals are approximately normally distributed. The scatterplot demonstrates that the residuals are randomly scattered around the horizontal line, indicating homoscedasticity. This suggests that the variance of the residuals is constant across all levels of the predicted values. The scatterplot also confirms the linearity assumption, as there are no distinct nonlinear patterns. The Durbin-Watson statistic of 1.847, indicates no significant autocorrelation in the residuals, ensuring their independence. Finally, the Variance Inflation Factor (VIF) values are all below 10, and the Condition Index values are mostly below 15, suggesting that multicollinearity is not a significant issue. Overall, these assessments support the validity of the linear regression analysis conducted on Customer Loyalty.

5.4.2. Results

Model 1: Without Control Variables.

The results of Model 1 in Table 5-22 show an R^2 value of 0.003, indicating that FinTech Adoption explains only 0.3% of the variance in Customer Loyalty. The adjusted R^2 value of -0.004 suggest no improvement when considering the number of predictors. The F value ($F(1, 140) = 0.421$, $p = 0.518$) is not statistically significant, meaning that FinTech Adoption alone is not a significant predictor of Customer Loyalty. The coefficient for FinTech Adoption in Table 5-23 is positive ($B = 0.015$), but not significant ($p = 0.518$), indicating that the observed effect could be due to random chance rather than a true relationship.

Model 2: With Control Variables.

The results of Model 2 in Table 5-22 include demographic variables in addition to FinTech Adoption. The R^2 value increases to 0.032, meaning the model explains 3.2% of the variance in Customer Loyalty. However, the adjusted R^2 value remains -0.004, indicating that the addition of control variables does not

improve the model. The F value ($F(5, 136) = 1{,}008$, $p = 0.405$) is not statistically significant, suggesting that the addition of demographic variables does not significantly enhance the predictive power of the model. The coefficient for FinTech Adoption in Table 5-23 remains positive ($B = 0.028$) but is still not significant ($p = 0{,}256$). Additionally, the demographic variables gender, age, education and income do not significantly affect Customer Loyalty.

The results of this analysis indicate that FinTech Adoption does not significantly affect Customer Loyalty. Both with and without the addition of demographic control variables, FinTech Adoption does not emerge to be a strong predictor of Customer Loyalty. The low R^2 values suggest that the models explain only a small portion of the variance in Customer Loyalty.

5.5. Hypothesis 3 - Differential Effect of FinTech Service Types on Customer Satisfaction

The purpose of this analysis is to examine the differential effect of various FinTech service types on Customer Satisfaction. In this context, Customer Satisfaction is the dependent variable, and different types of FinTech services are the independent variables. Additionally, demographic control variables are included to determine whether they influence the relationship.

5.5.1. Customer Satisfaction FinTech

The purpose of this analysis is to examine the differential effect of FinTech service types on Customer Satisfaction FinTech.

5.5.1.1. Assessment of Assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include normality, linearity, homoscedasticity, independence and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.5.1.1.1. Normality of Residuals

Figure 5-14 and Figure 5-15 present the histogram and P-P plot of the regression standardized residuals, which show that the residuals are reasonably normally distributed. The histogram displays a bell-shaped curve, and the P-P plot shows the points closely following the diagonal line. This suggests that the normality assumption is satisfied.

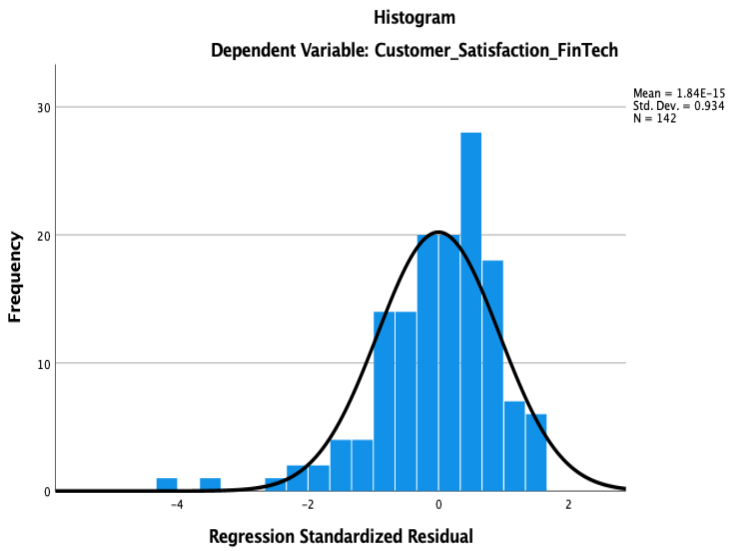

Figure 5-14. Hypothesis 3 Customer Satisfaction FinTech - Regression Standardized Residual – Histogram

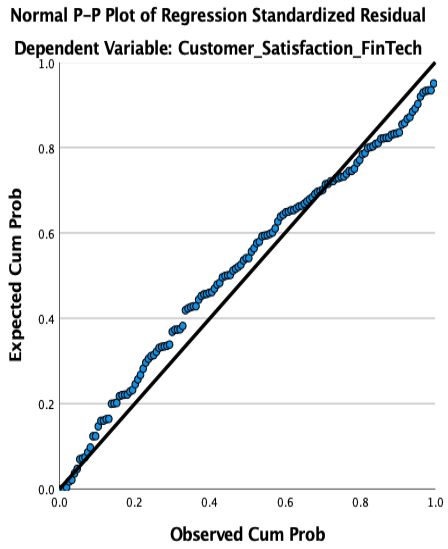

Figure 5-15. Hypothesis 3 Customer Satisfaction FinTech - Regression Strandardized Residual - P-P Plot

5.5.1.1.2. Homoscedasticity

Figure 5-16 shows the scatterplot of regression standardized residual vs. predicted value, with points randomly scattered around the horizontal line without any clear pattern. This indicates that the assumption of homoscedasticity (constant variance of residuals) is likely met.

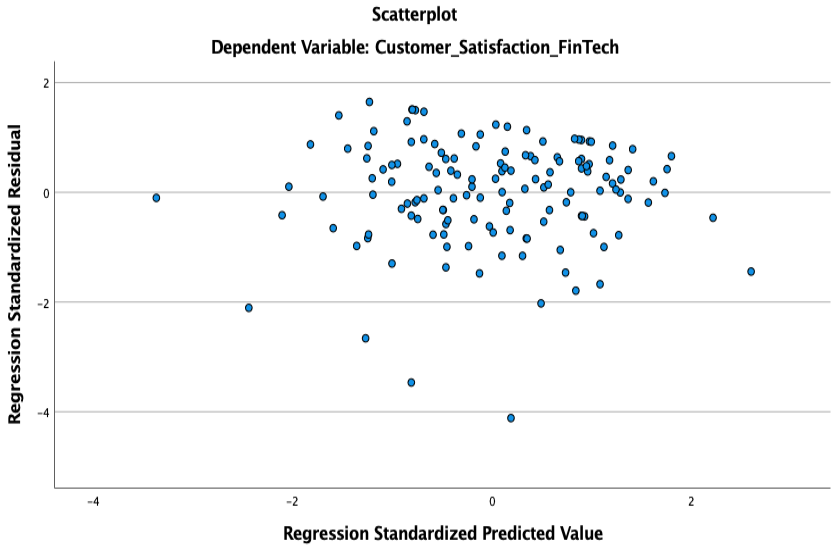

Figure 5-16. Hypothesis 3 Customer Satisfaction FinTech - Regression Standardized Predicted Value x Regression Studentized Residual – Scatterplot

5.5.1.1.3. Linear Relationship

Figure 5-16 shows the scatterplot of the regression standardized residuals against the predicted values. The absence of a distinct pattern suggests that the linearity assumption is satisfied, indicating that the relationship between the independent variables (types of FinTech services) and the dependent variable (Customer Satisfaction) is linear.

5.5.1.1.4. Independence of Residues

Table 5-24 shows the Durbin-Watson statistic for Model 2 is approximately 1.992, which is close to 2. This suggests that there is no significant autocorrelation in the residuals, indicating that the assumption of independence of errors is met.

Model Summary					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Durbin-Watson*
1	.304[a]	0,092	-0,008	0,71871	
2	.330[b]	0,109	-0,022	0,72342	1,992

a. Predictors: (Constant), Use FinTech service - Online currency exchange, Use FinTech service - Savings accounts, Use FinTech service - Security tips, Use FinTech service - Mobile banking, Use FinTech service - Budgeting & money management tools, Use FinTech service - Contactless payments, Use FinTech service - Investments, Use FinTech service - Advanced authentication, Use FinTech service - Peer-to-peer payments, Use FinTech service - Loans, Use FinTech service - Transaction monitoring, Use FinTech service - International transfers, Use FinTech service - Insurance through bank, Use FinTech service - Digital wallets

b. Predictors: (Constant), Use FinTech service - Online currency exchange, Use FinTech service - Savings accounts, Use FinTech service - Security tips, Use FinTech service - Mobile banking, Use FinTech service - Budgeting & money management tools, Use FinTech service - Contactless payments, Use FinTech service - Investments, Use FinTech service - Advanced authentication, Use FinTech service - Peer-to-peer payments, Use FinTech service - Loans, Use FinTech service - Transaction monitoring, Use FinTech service - International transfers, Use FinTech service - Insurance through bank, Use FinTech service - Digital wallets, Income, Education, Gender, Age

c. Dependent Variable: Customer_Satisfaction_FinTech

Table 5-24. Hypothesis 3 Customer Satisfaction FinTech - Model Summary

5.5.1.1.5. Multicollinearity

Table 5-25 shows the VIF values for the independent variables are all below 10, indicating that there is no severe multicollinearity among the predictors. This suggest that the assumption of no multicollinearity is satisfied.

Coefficients[a]										
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*95,0% Confidence Interval for B*		*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Lower Bound*	*Upper Bound*	*Tolerance*	*VIF*
1	*(Constant)*	3,741	0,416		9,001	0,000	2,918	4,563		
	Use FinTech service - Mobile banking	0,265	0,392	0,061	0,674	0,501	-0,512	1,041	0,862	1,160
	Use FinTech service - Contactless payments	0,074	0,201	0,039	0,366	0,715	-0,324	0,471	0,621	1,611
	Use FinTech service - Peer-to-peer payments	-0,023	0,182	-0,012	-0,125	0,901	-0,383	0,337	0,809	1,236
	Use FinTech service - Digital wallets	-0,061	0,178	-0,039	-0,344	0,731	-0,415	0,292	0,564	1,773
	Use FinTech service - International transfers	-0,051	0,173	-0,029	-0,298	0,766	-0,393	0,290	0,771	1,297
	Use FinTech service - Budgeting tools	0,023	0,166	0,013	0,139	0,890	-0,305	0,351	0,858	1,166
	Use FinTech service - Savings accounts	0,325	0,137	0,220	2,372	0,019	0,054	0,596	0,828	1,208
	Use FinTech service - Investments	-0,162	0,150	-0,101	-1,080	0,282	-0,459	0,135	0,812	1,232

	Use FinTech service - Loans	0,033	0,188	0,017	0,176	0,861	-0,339	0,405	0,785	1,273
	Use FinTech service - Advanced authentication	0,060	0,138	0,041	0,434	0,665	-0,213	0,332	0,798	1,253
	Use FinTech service - Transaction monitoring	-0,167	0,172	-0,095	-0,975	0,331	-0,507	0,172	0,758	1,319
	Use FinTech service - Security tips	0,044	0,175	0,024	0,249	0,804	-0,304	0,391	0,746	1,340
	Use FinTech service - Insurance through bank	-0,217	0,186	-0,116	-1,167	0,246	-0,585	0,151	0,726	1,378
	Use FinTech service - Online currency exchange	-0,155	0,238	-0,065	-0,651	0,516	-0,626	0,316	0,722	1,384
2	*(Constant)*	3,390	0,502		6,755	0,000	2,397	4,384		
	Use FinTech service - Mobile banking	0,243	0,400	0,056	0,609	0,544	-0,548	1,035	0,842	1,188
	Use FinTech service - Contactless payments	0,082	0,207	0,044	0,396	0,693	-0,327	0,491	0,594	1,683
	Use FinTech service - Peer-to-peer payments	0,013	0,187	0,007	0,072	0,943	-0,357	0,384	0,777	1,288

Use FinTech service - Digital wallets	-0,084	0,181	-0,053	-0,466	0,642	-0,444	0,275	0,553	1,807
Use FinTech service - International transfers	-0,059	0,177	-0,033	-0,336	0,738	-0,410	0,291	0,744	1,344
Use FinTech service – Budgeting tools	0,014	0,169	0,008	0,085	0,932	-0,321	0,350	0,834	1,199
Use FinTech service - Savings accounts	0,321	0,138	0,217	2,321	0,022	0,047	0,594	0,825	1,212
Use FinTech service - Investments	-0,121	0,161	-0,076	-0,750	0,454	-0,440	0,198	0,711	1,407
Use FinTech service - Loans	-0,035	0,198	-0,018	-0,175	0,862	-0,427	0,358	0,715	1,398
Use FinTech service - Advanced authentication	0,037	0,142	0,025	0,257	0,798	-0,245	0,318	0,757	1,322
Use FinTech service - Transaction monitoring	-0,167	0,176	-0,094	-0,950	0,344	-0,514	0,181	0,736	1,359
Use FinTech service - Security tips	0,037	0,193	0,020	0,190	0,850	-0,345	0,418	0,626	1,597
Use FinTech service - Insurance through bank	-0,233	0,192	-0,125	-1,212	0,228	-0,614	0,148	0,686	1,458
Use FinTech service - Online	-0,115	0,244	-0,048	-0,473	0,637	-0,599	0,368	0,696	1,437

	currency exchange								
	Gender	0,126	0,147	0,088	0,853	0,395	-0,166	0,418	0,679	1,474
	Age	0,026	0,084	0,036	0,315	0,753	-0,140	0,192	0,543	1,842
	Education	0,007	0,097	0,007	0,075	0,940	-0,185	0,199	0,786	1,272
	Income	0,059	0,067	0,095	0,879	0,381	-0,074	0,192	0,620	1,613

a. Dependent Variable: Customer_Satisfaction_FinTech

Table 5-25. Hypothesis 3 Customer Satisfaction FinTech – Coefficients

5.5.1.1.6. Conclusion

The assessment of assumptions for the linear regression model on Customer Satisfaction with FinTech services indicates that the model meets the necessary criteria for reliable and valid interpretation. The histogram and P-P plot show that the residuals are approximately normally distributed. The histogram displays a bell-shaped curve, and the P-P plot shows that the residuals closely follow the diagonal, both suggesting normality. The scatterplot demonstrates a random distribution of points, indicating homoscedasticity and suggesting that the variance of the residuals is constant across all levels of predicted values. This scatterplot also confirms the linearity assumption, as there are no distinct nonlinear patterns, such as curves or clusters. The Durbin-Watson statistic of 1.992, indicates no significant autocorrelation in the residuals, ensuring their independence. Finally, the Variance Inflation Factor (VIF) values are all below 10, indicating that multicollinearity is not a significant issue. Overall, these assessments support the validity of the linear regression analysis conducted on Customer Satisfaction with FinTech services.

5.5.1.2. Results

Model 1: Without Control Variables.

The results of Model 1 in Table 5-24 show an R^2 value of 0.092, indicating that the model explains 9.2% of the variation in Customer Satisfaction. However, the adjusted R^2 value is -0.008, indicating minimal improvement when considering the number of predictors. The F value ($F(14, 127) = 0.921$, $p = 0.538$) is not statistically significant, meaning that FinTech services by themselves are not significant predictors of Customer Satisfaction. The coefficient for the use of FinTech services in Table 5-25 for savings accounts is positive ($B = 0.325$, $p = 0.019$), but the other coefficients are not significant.

Model 2: With Control Variables.

The results of Model 2 in Table 5-24 include demographic variables in addition to FinTech services. The R^2 value increases slightly to 0.109, meaning that the model explains 10.9% of the variation in

Customer Satisfaction. However, the adjusted R^2 value remains negative (-0.022), suggesting that the addition of control variables does not improve the predictive power of the model. The F value ($F(18, 123) = 0.834$, $p = 0.658$) is again not statistically significant, indicating that the addition of demographic variables does not significantly enhance the predictive power of the model. The coefficient for the use of FinTech services for savings accounts in Table 5-25 remains positive ($B = 0.321$, $p = 0.022$), but other coefficients do not remain significant.

The results of this analysis indicate that FinTech services are generally not significant predictors of Customer Satisfaction. Even with the addition of demographic control variables, FinTech services do not appear to be strong predictors of Customer Satisfaction. The low R^2 values suggest that the models can explain only a small portion of the variation in Customer Satisfaction.

5.5.2. Customer Satisfaction Overall

The purpose of this analysis is to examine the differential effect of various FinTech service types on Customer Satisfaction. In this context, Customer Satisfaction Overall is the dependent variable, while the different types of FinTech services are the independent variables.

5.5.2.1. Assessment of assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include normality, linearity, homoscedasticity, independence and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.5.2.1.1. Normality of Residuals

Figure 5-17 and Figure 5-18 show the histogram and P-P plot of the regression standardized residuals, indicating that the residuals are reasonably normally distributed. The histogram displays a bell-shaped curve, and the P-P plot shows the points closely following the diagonal line, suggesting that the normality assumption is satisfied.

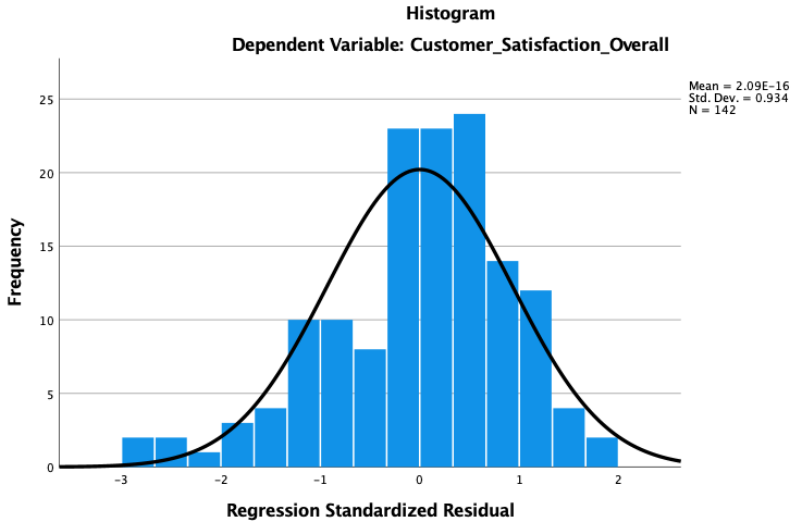

Figure 5-17. Hypothesis 3 Customer Satisfaction Overall - Regression Standardized Residual - Histogram

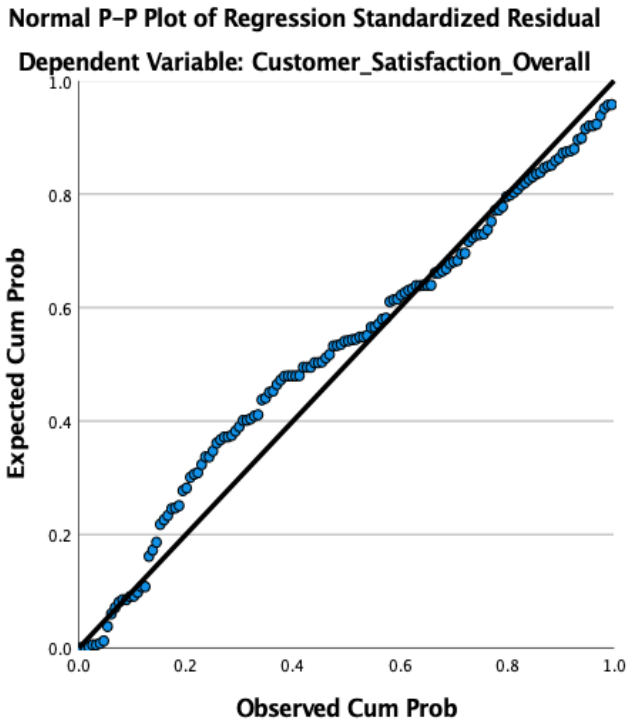

Figure 5-18. Hypothesis 3 Customer Satisfaction Overall - Regression Standardized Residual - P-P Plot

5.5.2.1.2. Homoscedasticity

The scatterplot shown in Figure 5-19 of regression standardized residual against predicted value displays points randomly scattered around the horizontal line without any clear pattern. This indicates that the assumption of homoscedasticity (constant variance of residuals) is likely met.

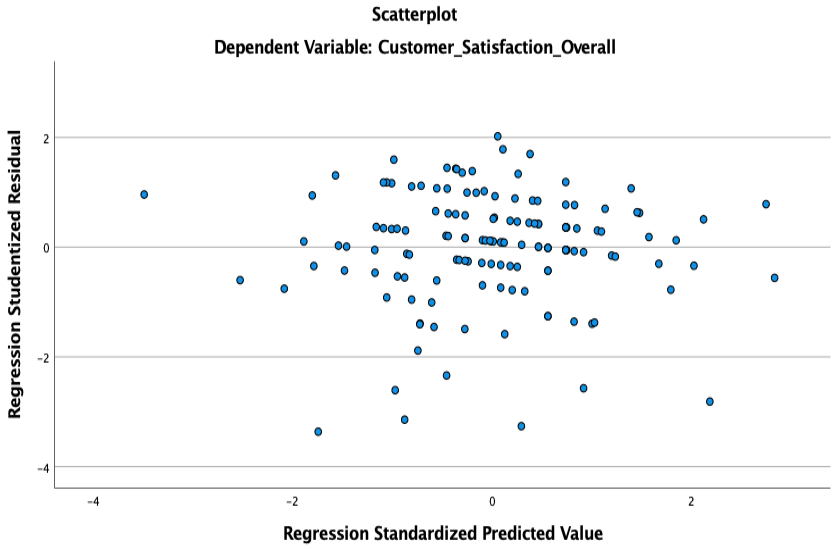

Figure 5-19.Hypothesis 3 Customer Satisfaction Overall - Regression Standardized Predicted Value x Regression Studentized Residual – Scatterplot

5.5.2.1.3. Linear Relationship

The scatterplot in Figure 5-19 of the regression standardized residuals against the predicted values shows no distinct pattern, indicating that the linearity assumption is met. This suggests that the relationship between the independent variables (types of FinTech services) and the dependent variable (Customer Satisfaction) is linear.

5.5.2.1.4. Independence of Residues

Table 5-26 shows the Durbin-Watson statistic for Model 2 is approximately 2.346, which is close to 2. This suggests that there is no significant autocorrelation in the residuals, indicating that the assumption of independence of errors is met.

Model Summary					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Durbin-Watson*
1	.445[a]	0,198	0,110	0,57472	
2	.472[b]	0,223	0,109	0,57498	2,346

a. Predictors: (Constant), Use FinTech service - Online currency exchange, Use FinTech service - Savings accounts, Use FinTech service - Security tips, Use FinTech service - Mobile banking, Use FinTech service - Budgeting & money management tools, Use FinTech service - Contactless payments, Use FinTech service - Investments, Use FinTech service - Advanced authentication, Use FinTech service - Peer-to-peer payments, Use FinTech service - Loans, Use FinTech service - Transaction monitoring, Use FinTech service - International transfers, Use FinTech service - Insurance through bank, Use FinTech service - Digital wallets

b. Predictors: (Constant), Use FinTech service - Online currency exchange, Use FinTech service - Savings accounts, Use FinTech service - Security tips, Use FinTech service - Mobile banking, Use FinTech service - Budgeting & money management tools, Use FinTech service - Contactless payments, Use FinTech service - Investments, Use FinTech service - Advanced authentication, Use FinTech service - Peer-to-peer payments, Use FinTech service - Loans, Use FinTech service - Transaction monitoring, Use FinTech service - International transfers, Use FinTech service - Insurance through bank, Use FinTech service - Digital wallets, Income, Education, Gender, Age

c. Dependent Variable: Customer_Satisfaction_Overall

Table 5-26. Hypothesis 3 Customer Satisfaction Overall - Model Summary

5.5.2.1.5. Multicollinearity

Table 5-27 shows that the VIF values for the independent variables are all below 10, suggesting that there is no severe multicollinearity among the predictors. This indicates that the assumption of no multicollinearity is satisfied.

Coefficient a										
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*95,0% Confidence Interval for B*		*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Lower Bound*	*Upper Bound*	*Tolerance*	*VIF*
1	*(Constant)*	2,781	0,332		8,366	0,000	2,123	3,439		
	Use FinTech service - Mobile banking	0,811	0,314	0,221	2,583	0,011	0,190	1,432	0,862	1,160
	Use FinTech service - Contactless payments	0,179	0,161	0,113	1,116	0,267	-0,139	0,497	0,621	1,611
	Use FinTech service - Peer-to-peer payments	0,237	0,146	0,144	1,628	0,106	-0,051	0,525	0,809	1,236
	Use FinTech service - Digital wallets	-0,079	0,143	-0,058	-0,552	0,582	-0,361	0,204	0,564	1,773

Use FinTech service - International transfers	0,047	0,138	0,031	0,343	0,732	-0,226	0,321	0,771	1,297
Use FinTech service - Budgeting tools	-0,045	0,133	-0,029	-0,340	0,735	-0,308	0,217	0,858	1,166
Use FinTech service - Savings accounts	0,221	0,110	0,176	2,012	0,046	0,004	0,437	0,828	1,208
Use FinTech service - Investments	-0,238	0,120	-0,175	-1,985	0,049	-0,475	-0,001	0,812	1,232
Use FinTech service - Loans	-0,119	0,150	-0,071	-0,793	0,429	-0,417	0,178	0,785	1,273
Use FinTech service - Advanced authentication	0,065	0,110	0,053	0,591	0,555	-0,153	0,283	0,798	1,253
Use FinTech service - Transaction monitoring	0,177	0,137	0,117	1,287	0,200	-0,095	0,449	0,758	1,319
Use FinTech service - Security tips	0,096	0,140	0,063	0,684	0,495	-0,182	0,374	0,746	1,340
Use FinTech service - Insurance through bank	-0,242	0,149	-0,152	-1,629	0,106	-0,536	0,052	0,726	1,378
Use FinTech service - Online currency exchange	-0,179	0,190	-0,088	-0,938	0,350	-0,555	0,198	0,722	1,384

2	*(Constant)*	2,984	0,399		7,480	0,000	2,194	3,774		
	Use FinTech service - Mobile banking	0,869	0,318	0,237	2,734	0,007	0,240	1,498	0,842	1,188
	Use FinTech service - Contactless payments	0,245	0,164	0,154	1,492	0,138	-0,080	0,570	0,594	1,683
	Use FinTech service - Peer-to-peer payments	0,245	0,149	0,149	1,649	0,102	-0,049	0,539	0,777	1,288
	Use FinTech service - Digital wallets	-0,086	0,144	-0,064	-0,597	0,552	-0,371	0,199	0,553	1,807
	Use FinTech service - International transfers	0,028	0,141	0,018	0,196	0,845	-0,251	0,306	0,744	1,344
	Use FinTech service – Budgeting tools	-0,020	0,135	-0,013	-0,146	0,884	-0,286	0,247	0,834	1,199
	Use FinTech service - Savings accounts	0,211	0,110	0,168	1,923	0,057	-0,006	0,429	0,825	1,212
	Use FinTech service - Investments	-0,263	0,128	-0,193	-2,053	0,042	-0,517	-0,009	0,711	1,407
	Use FinTech service - Loans	-0,058	0,158	-0,034	-0,365	0,716	-0,370	0,255	0,715	1,398
	Use FinTech service - Advanced authentication	0,093	0,113	0,075	0,819	0,414	-0,131	0,317	0,757	1,322

Use FinTech service - Transaction monitoring	0,194	0,140	0,129	1,392	0,166	-0,082	0,470	0,736	1,359
Use FinTech service - Security tips	0,031	0,153	0,020	0,203	0,840	-0,272	0,334	0,626	1,597
Use FinTech service - Insurance through bank	-0,270	0,153	-0,169	-1,763	0,080	-0,572	0,033	0,686	1,458
Use FinTech service - Online currency exchange	-0,124	0,194	-0,061	-0,640	0,523	-0,508	0,260	0,696	1,437
Gender	-0,084	0,117	-0,069	-0,720	0,473	-0,316	0,148	0,679	1,474
Age	0,059	0,067	0,095	0,882	0,380	-0,073	0,191	0,543	1,842
Education	-0,142	0,077	-0,165	-1,841	0,068	-0,294	0,011	0,786	1,272
Income	-0,014	0,053	-0,026	-0,258	0,797	-0,119	0,092	0,620	1,613

a. Dependent Variable: Customer_Satisfaction_Overall

Table 5-27. Hypothesis 3 Customer Satisfaction Overall - Coefficients

5.5.2.1.6. Conclusion

The assessment of assumptions for the linear regression model on overall Customer Satisfaction with FinTech services indicates that the model meets the necessary criteria for reliable and valid interpretation. The residuals are approximately normally distributed, with the histogram displaying a bell-shaped curve and the P-P plot showing the residuals closely following the diagonal, both suggesting normality. The scatterplot demonstrates a random distribution of points, indicating homoscedasticity and suggesting that the variance of the residuals is constant across all levels of predicted values. This scatterplot also confirms the linearity assumption, as there are no distinct nonlinear patterns, such as curves or clusters. The Durbin-Watson statistic of 2.346, indicates no significant autocorrelation in the residuals, ensuring their independence. Finally, the Variance Inflation Factor (VIF) values are all below 10, indicating that multicollinearity is not a significant issue. Overall, these assessments support the validity of the linear regression analysis conducted on overall Customer Satisfaction with FinTech services.

5.5.2.2. Results

Model 1: Without control variables.

The results of Model 1 in Table 5-26 show that the R^2 value is 0.198, indicating that the model explains 19.8% of the variation in Customer Satisfaction. The adjusted R^2 value is 0.110, indicating a moderate improvement when considering the number of predictors. The F value ($F(14, 127) = 2.246$, $p = 0.009$) is statistically significant, meaning that FinTech services as a whole are significant predictors of Customer Satisfaction. The coefficient for some FinTech services in Table 5-27, such as mobile banking ($B = 0.811$, $p = 0.011$) and savings accounts ($B = 0.221$, $p = 0.046$) are significant, while others are not.

Model 2: With control variables.

The results of Model 2 in Table 5-26 include demographic variables in addition to FinTech services. The R^2 value increases to 0.223, meaning the model explains 22.3% of the variation in Customer Satisfaction. The adjusted R^2 value is 0.109, suggesting that the addition of control variables offers limited improvement. The F value ($F(18, 123) = 1.961$, $p = 0.017$) is statistically significant, indicating that the addition of demographic variables improves the predictive value of the model. The coefficient for certain FinTech services in Table 5-27, such as mobile banking ($B = 0.869$, $p = 0.007$), remains significant, while other services do not.

The results of this analysis indicate that certain FinTech services are significant predictors of Customer Satisfaction, especially when demographic control variables are included. The relatively higher R^2 values suggest that the models explain a fair share of the variation in Customer Satisfaction.

5.6. Hypothesis 4 - Mediation Effect of Customer Satisfaction on FinTech Adoption and Loyalty

This hypothesis investigates whether Customer Satisfaction mediates the relationship between FinTech Adoption and Customer Loyalty. The aim is to determine if Customer Satisfaction serves as an intermediate variable that influences the impact of FinTech Adoption on Customer Loyalty.

5.6.1. Mediation Effect of Customer Satisfaction FinTech

This hypothesis examines whether Customer Satisfaction FinTech mediates the relationship between FinTech service Adoption and Customer Loyalty.

5.6.1.1. Assessment of assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include normality, linearity, homoscedasticity, independence and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.6.1.1.1. Normality of Residuals

Table 5-28 presents the assessment of the normality of residuals using the Kolmogorov-Smirnov test and the Shapiro-Wilk test. The results indicate that the residuals are normally distributed:

- Kolmogorov-Smirnov test: p=0.084
- Shapiro-Wilk test: p=0.109

Both tests show no significant deviation from normality ($p > 0.05$), supporting the assumption of normality.

Tests of Normality						
	Kolmogorov-Smirnov[a]			*Shapiro_Wilk*		
	Statistic	*df*	*Sig.*	*Statistic*	*df*	*Sig.*
Unstandardized Predicted Value	0,066	142	.200*	0,983	142	0,084
Unstandardized Residual	0,067	142	.200*	0,984	142	0,109
Standardized Predicted Value	0,066	142	.200*	0,983	142	0,084
Standardized Residual	0,067	142	.200*	0,984	142	0,109

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 5-28. Hypothesis 4 Customer Satisfaction FinTech - Test of Normality

5.6.1.1.2. Homoscedasticity

Figure 5-20 shows that homoscedasticity was assessed by plotting standardized residuals against standardized predicted values. The scatterplot revealed no distinct pattern or funnel shape, indicating that the variance of residuals remains constant across all levels of predicted values. This suggests that the assumptions of homoscedasticity of satisfied.

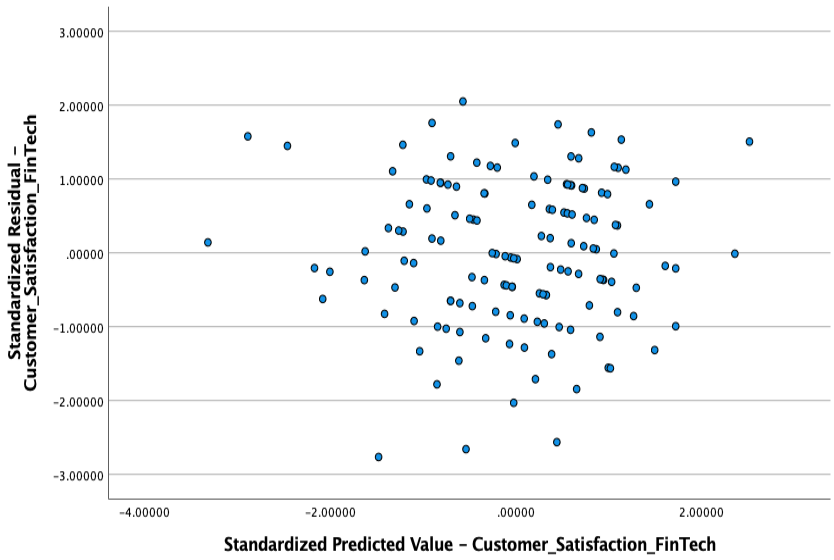

Figure 5-20. Hypothesis 4 Customer Satisfaction FinTech - Standardized Predicted Value x Standardized Residual

5.6.1.1.3. Linear Relationship

To evaluate the linear relationship between the independent variables and the dependent variable, scatterplots of FinTech Adoption and Customer Satisfaction FinTech against Customer Loyalty were analyzed. The scatterplots in Figure 5-21 and Figure 5-22 displayed an approximately linear pattern, which confirms the assumption of linearity.

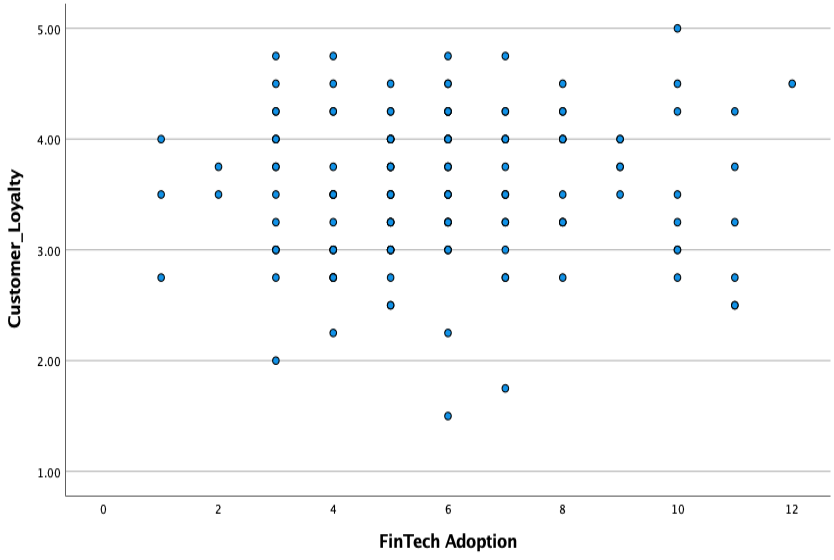

Figure 5-21. Hypothesis 4 Customer Satisfaction FinTech - FinTech Adoption x Customer Loyalty

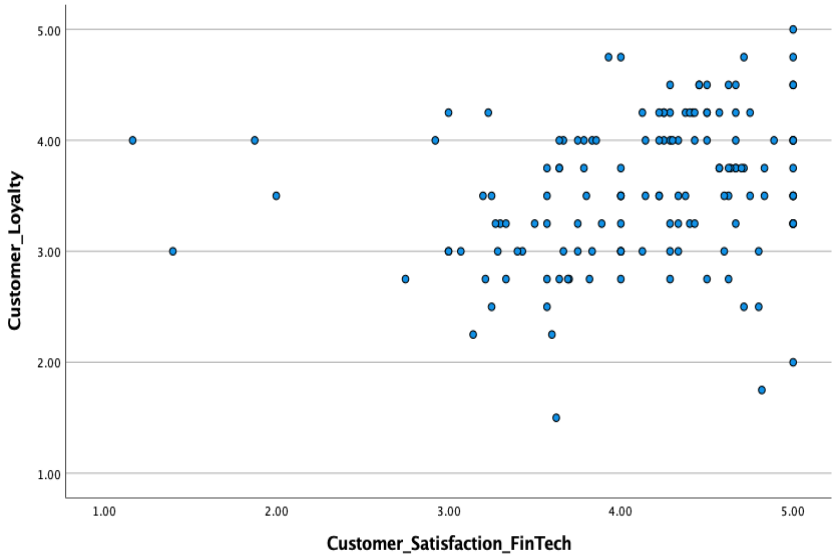

Figure 5-22. Hypothesis 4 Customer Satisfaction FinTech - Customer Satisfaction FinTech x Customer Loyalty

5.6.1.1.4. Independence of Residuals

The scatterplot in Figure 5-20 exhibits a fairly random distribution of residuals around the horizontal axis, with no discernible pattern such as clustering or systematic distribution of points. This suggests that the residuals are independent, and that no significant autocorrelation is present, which positively indicates the validity of the regression model.

5.6.1.1.5. Multicollinearity

Table 5-29 presents the assessment of multicollinearity using Variance Inflation Factor (VIF) and Tolerance values. The VIF values for all predictors were below 5, and the Tolerance values were above 0.1, that multicollinearity is not a significant concern. Specifically:

- VIF values ranged from 1.001 to 1.472
- Tolerance values ranged from 0.679 to 0.999

Based on these diagnostics, it can be concluded that all assumptions for the regression analysis have been adequately met.

Coefficients[a]								
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	*(Constant)*	2,565	0,344		7,452	0,000		
	FinTech Adoption	0,017	0,023	0,061	0,741	0,460	0,999	1,001

	Customer_Satisfaction_FinTech	0,216	0,075	0,236	2,872	0,005	0,999	1,001
2	*(Constant)*	2,654	0,398		6,665	0,000		
	FinTech Adoption	0,031	0,024	0,110	1,274	0,205	0,903	1,108
	Customer_Satisfaction_FinTech	0,219	0,076	0,240	2,871	0,005	0,970	1,031
	Gender	0,065	0,113	0,050	0,571	0,569	0,895	1,117
	Age	0,014	0,065	0,021	0,211	0,833	0,713	1,402
	Education	-0,121	0,080	-0,131	-1,517	0,132	0,899	1,112
	Income	-0,041	0,057	-0,073	-0,729	0,467	0,679	1,472

a. Dependent Variable: Customer_Loyalty

Table 5-29. Hypothesis 4 Customer Satisfaction FinTech – Coefficients

5.6.1.1.6. Conclusion

The evaluation of assumptions for the regression model exploring the mediation effect of Customer Satisfaction on FinTech Adoption and Customer Loyalty shows that the model meets the essential criteria for reliable and valid results. The residuals are normally distributed, as evidenced by the Kolmogorov-Smirnov and Shapiro-Wilk tests, both showing p-values greater than 0.05, and the normal probability plots, which align closely with the diagonal line. The homoscedasticity is satisfied, with no discernible pattern or funnel shape in the scatterplot of standardized residuals against standardized predicted values, suggesting constant variance of residuals. Additionally, the scatterplots reveal an approximately linear relationship between the independent variables (FinTech Adoption and Customer Satisfaction_FinTech) and Customer Loyalty, confirming the assumption of linearity. The scatterplot supports the independence of residuals, showing a random distribution with no evident clustering or systematic pattern, thus indicating the absence of significant autocorrelation. Finally, the Variance Inflation Factor (VIF) values, ranging from 1.001 to 1.472, and Tolerance values, from 0.679 to 0.999, indicate that multicollinearity is not a significant concern. Collectively, these findings affirm that the assumptions for the regression analysis are adequately met, validating the investigation of the mediation effect of Customer Satisfaction on the relationship between FinTech Adoption and Customer Loyalty.

5.6.1.2. Results

The hypothesis that Customer Satisfaction FinTech mediates the relationship between FinTech Adoption and Customer Loyalty was tested using a mediation analysis with PROCESS macro. In Model 4, a mediation analysis is conducted to examine the relationship between FinTech Adoption (X) and Customer Loyalty (Y) with Customer Satisfaction with FinTech (M) as the mediator. The covariates included in the model are Gender, Age, Education, and Income, which control for their potential influence on the dependent variable. The sample size for this analysis is 142 respondents. The level of

confidence for all confidence intervals in the output is 95.000 and the number of bootstrap samples for percentile bootstrap confidence interval is 5.000.

Variables:

- Y (Dependent Variable): Customer Loyalty (CustLoy)
- X (Independent Variable): FinTech Adoption (FinAdopt)
- M (Mediator): Customer Satisfaction with FinTech (CustSatF)
- Covariates: Gender, Age, Education, Income

Model Summary – Outcome Variable CustSafF

R	*R-sq*	*MSE*	*F*	*df1*	*df2*	*P*
.1743	.0304	.5149	.8527	5.0000	136.0000	.5149

Table 5-30. Hypothesis 4 Customer Satisfaction FinTech - Model Summary - Outcome Variable CustSafF

Model

	coeff	se	t	p	LLCI	ULCI
Constant	3.6474	0.3201	11.3948	.0000	3.0144	4.2804
FinAdopt	-0.0115	0.0272	-0.4238	0.6724	-0.0652	0.0422
Gender	0.2001	0.1261	1.5862	0.115	-0.0494	0.4495
Age	0.0139	0.0726	0.191	0.8488	-0.1296	0.1574
Education	0.0322	0.0899	0.3587	0.7204	-0.1455	0.2100
Income	0.0678	0.0634	1.0698	0.2866	-0.0575	0.1931

Table 5-31. Hypothesis 4 Customer Satisfaction FinTech - Model - Outcome Variable CustSafF

Model Summary – Outcome Variable: CustLoy

R	*R-sq*	*MSE*	*F*	*df1*	*df2*	*P*
.2957	.0874	.4077	2.1562	6.0000	135.0000	.0510

Table 5-32. Hypothesis 4 Customer Satisfaction FinTech - Model Summary - Outcome Variable: CustLoy

Model

	coeff	*se*	*t*	*p*	*LLCI*	*ULCI*
Constant	2.6542	0.3982	6.6649	0.0000	1.8666	3.4418
FinAdopt	0.0308	0.0242	1.2744	0.2047	-0.017	0.0786
CustSatO	0.2191	0.0763	2.8714	0.0047	0.0682	0.3700
Gender	0.0647	0.1133	0.5708	0.5691	-0.1593	0.2886
Age	0.0136	0.0646	0.2111	0.8331	-0.1141	0.1413
Education	-0.1214	0.08	-1.5166	0.1317	-0.2797	0.0369

Income	-0.0413	0.0566	-0.7287	0.4674	-0.1532	0.0707

Table 5-33. Hypothesis 4 Customer Satisfaction FinTech - Model - Outcome Variable CustLoy

Direct effect of X on Y

Effect	*se*	*t*	*p*	*LLCI*	*ULCI*
0.0308	0.0242	1.2744	0.2047	-0.017	0.0786

Table 5-34. Hypothesis 4 Customer Satisfaction FinTech - Direct Effect of X on Y

Indirect effect(s) of X on Y

	Effect	*BootSE*	*BootLLCI*	*BootULCI*
CustSatO	-.0025	.0057	-.0138	.0095

Table 5-35. Hypothesis 4 Customer Satisfaction FinTech - Indirect Effect of X on Y

5.6.1.2.1. Direct Effect

Table 5-34 presents the direct effect of FinTech Adoption on Customer Loyalty. The direct effect was found to be 0.0308 with a standard error (SE) of 0.0242, and this effect was not statistically significant ($p = 0.2047$).

5.6.1.2.2. Indirect Effect

Table 5-35 details the indirect effect of FinTech Adoption on Customer Loyalty through Customer Satisfaction with FinTech, as determined using the bootstrapping method. The indirect effect ($a \times b$) was calculated to be -0.0025 with a bootstrap standard error (BootSE) of 0.0057. The 95% bootstrap confidence interval for this effect ranged from (BootLLCI) -0.0138 to (BootULCI) 0.0095. Since the confidence interval includes zero, this indicates that the indirect effect is not statistically significant.

5.6.1.2.3. Total Effect

The total effect of FinTech Adoption on Customer Loyalty was calculated to be 0.0308, encompassing both the direct and indirect effect. The mediation analysis revealed that the direct effect of FinTech Adoption on Customer Loyalty was not statistically significant. Similarly, the indirect effect through Customer Satisfaction with FinTech was also found to be non-significant. As a result, the overall effect of FinTech Adoption on Customer Loyalty remained non-significant. Therefore, it can be concluded that Customer Satisfaction with FinTech does not mediate the relationship between FinTech Adoption and Customer Loyalty. This implies that FinTech Adoption does not have a significant impact on Customer Loyalty, either directly or indirectly through Customer Satisfaction with FinTech, when controlling for factors such as gender, age, education and income.

5.6.2. Mediation Effect of Customer Satisfaction Overall

This hypothesis examines whether Customer Satisfaction Overall mediates the relationship between FinTech service Adoption and Customer Loyalty.

5.6.2.1. Assessment of assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include normality, linearity, homoscedasticity, independence and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.6.2.1.1. Normality of Residuals

Table 5-36 presents the assessment of residual normality using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The results indicated that the residuals are normally distributed:

- Kolmogorov-Smirnov test: p=0.053
- Shapiro-Wilk test: p=0.073

Both p-values are greater dan 0.05, indicating that no significant deviation from normality.

Tests of Normality

	Kolmogorov-Smirnova			*Shapiro_Wilk*		
	Statistic	*df*	*Sig.*	*Statistic*	*df*	*Sig.*
Unstandardized Predicted Value	0,093	142	0,004	0,959	142	0,000
Unstandardized Residual	0,074	142	0,053	0,983	142	0,073
Standardized Predicted Value	0,093	142	0,004	0,959	142	0,000
Standardized Residual	0,074	142	0,053	0,983	142	0,073

Table 5-36. Hypothesis 4 Customer Satisfaction Overall – Test of Normality

a. Lilliefors Significance Correction

5.6.2.1.2. Homoscedasticity

Homoscedasticity was evaluated by plotting standardized residuals against standardized predicted values. The scatterplot in Figure 5-23 shows no clear pattern or funnel shape, suggesting that the variance of residuals is constant across all levels of predicted values. This indicates that the assumption of homoscedasticity is met.

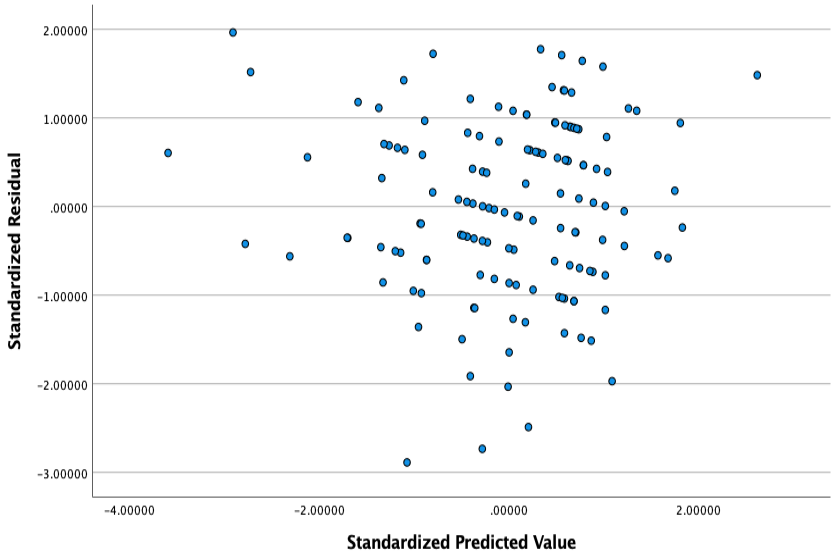

Figure 5-23. Hypothesis 4 Customer Satisfaction Overall - Standardized Predicted Value x Standardized Residual

5.6.2.1.3. Linear Relationship

The linear relationship between the independent variables and the dependent variable was assessed using scatterplots. The scatterplots of FinTech Adoption and Customer Satisfaction Overall against Customer Loyalty in Figure 5-24 and Figure 5-25 demonstrated a roughly linear pattern, confirming the linearity assumption.

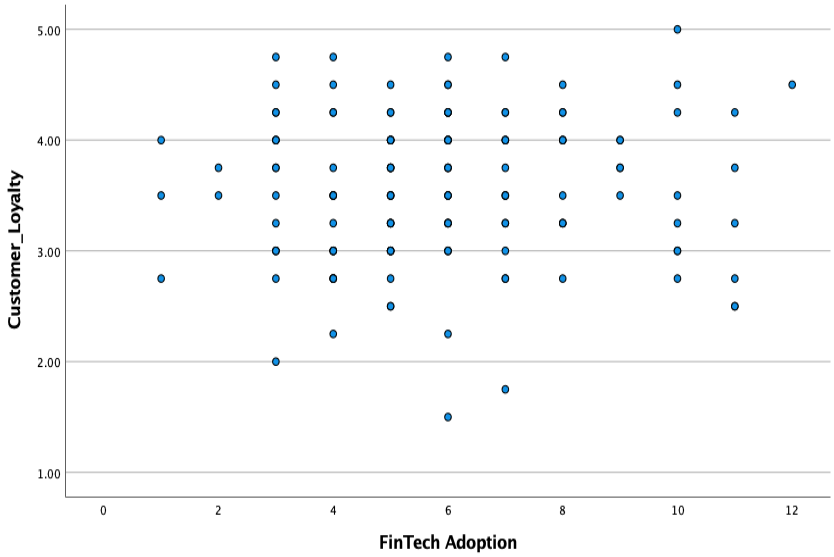

Figure 5-24. Hypothesis 4 Customer Satisfaction Overall - FinTech Adoption x Customer Loyalty

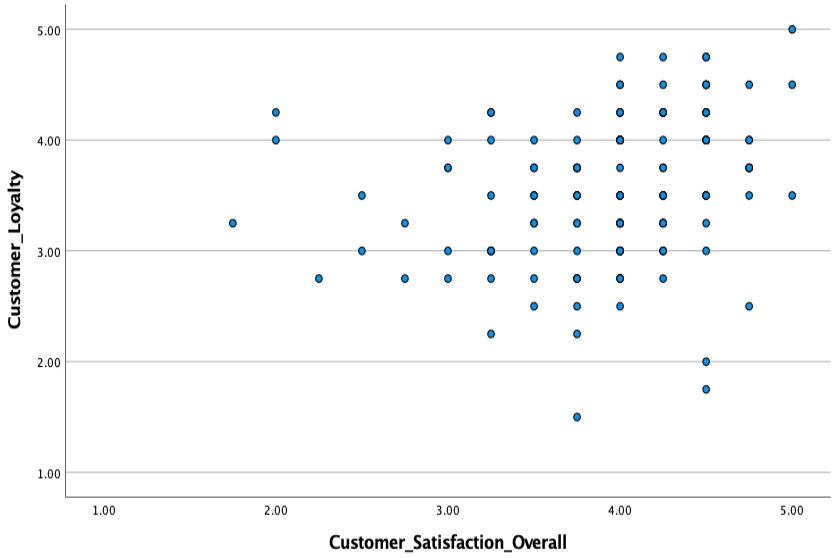

Figure 5-25. Hypothesis 4 Customer Satisfaction Overall - Customer Satisfaction Overall x Customer Loyalty

5.6.2.1.4. Independence of Residuals

The scatterplot in Figure 5-23 shows no clear signs of pattern formation, indicating that the residuals are independent of each other. This means that the assumption of independence of residuals has not been violated in your regression analysis.

5.6.2.1.5. Multicollinearity

Table 5-37 displays the assessment of multicollinearity using Variance Inflation Factor (VIF) and Tolerance values. The VIF values for all predictors were below 5, and the Tolerance values were above 0.1, indicating no significant multicollinearity:

- VIF values ranged from 1.010 to 1.460
- Tolerance values ranged from 0.685 to 0.990

Based on these diagnostics, all assumptions for the regression analysis have been adequately met.

Coefficients[a]								
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	*(Constant)*	2,427	0,364		6,663	0,000		
	FinTech Adoption	0,008	0,023	0,029	0,354	0,724	0,990	1,010
	Customer_Satisfaction_Overall	0,273	0,088	0,255	3,093	0,002	0,990	1,010
2	*(Constant)*	2,489	0,445		5,596	0,000		

FinTech Adoption	0,019	0,024	0,069	0,789	0,432	0,889	1,125
Customer_Satisfaction_Overall	0,253	0,090	0,236	2,824	0,005	0,971	1,030
Gender	0,091	0,113	0,070	0,809	0,420	0,909	1,100
Age	0,015	0,065	0,022	0,230	0,819	0,713	1,402
Education	-0,089	0,081	-0,096	-1,103	0,272	0,899	1,125
Income	-0,024	0,056	-0,042	-0,426	0,671	0,685	1,460

a. Dependent Variable: Customer_Loyalty

Table 5-37. Hypothesis 4 Customer Satisfaction Overall - Coefficients

5.6.2.1.6. Conclusion

The evaluation of assumptions for the regression model investigating the mediation effect of Customer Satisfaction on the relationship between FinTech Adoption and Customer Loyalty confirms that the model adheres to the necessary criteria for reliable and valid results. It reveals that residuals are normally distributed, with the Kolmogorov-Smirnov test showing a p-value of 0.053 and the Shapiro-Wilk test showing a p-value of 0.073, both greater than 0.05. This indicates that there is no significant deviation from normality. Additionally, normal probability plots display residuals that align closely with the diagonal line, supporting the normality assumption. Homoscedasticity was assessed by examining the scatterplot of standardized residuals against standardized predicted values. The scatterplot shows no discernible pattern or funnel shape, indicating that the variance of residuals is consistent across all levels of predicted values, thereby meeting the assumption of homoscedasticity. The linearity of the relationship between the independent variables (FinTech Adoption and Customer Satisfaction Overall) and Customer Loyalty was confirmed through scatterplots. It demonstrates a generally linear relationship, which supports the linearity assumption. The independence of residuals was verified by the scatterplot, which shows no clear patterns or clustering, indicating that the residuals are independent and that there is no significant autocorrelation. Finally, multicollinearity was assessed using Variance Inflation Factor (VIF) and Tolerance values. The VIF values ranged from 1.010 to 1.460, and Tolerance values ranged from 0.685 to 0.990, suggesting that multicollinearity is not a significant issue. Overall, these diagnostic checks confirm that all key assumptions for the regression analysis are satisfied, ensuring the validity of the investigation into the mediation effect of Customer Satisfaction on the relationship between FinTech Adoption and Customer Loyalty.

5.6.2.2. Results

The hypothesis that Customer Satisfaction Overall mediates the relationship between FinTech Adoption and Customer Loyalty was tested using a mediation analysis with PROCESS macro. In Model 4, a mediation analysis is conducted to examine the relationship between FinTech Adoption (X) and

Customer Loyalty (Y) with Customer Satisfaction Overall (M) as the mediator. The covariates included in the model are Gender, Age, Education, and Income, which control for their potential influence on the dependent variable. The sample size for this analysis is 142 respondents. The level of confidence for all confidence intervals in the output is 95.000 and the number of bootstrap samples for percentile bootstrap confidence interval is 5.000.

Variables:

- Y (Dependent Variable): Customer Loyalty (CustLoy)
- X (Independent Variable): FinTech Adoption (FinAdopt)
- M (Mediator): Customer Satisfaction Overall (CustSatO)
- Covariates: Gender, Age, Education, Income

Model Summary – Outcome Variable CustSafO

R	*R-sq*	*MSE*	*F*	*df1*	*df2*	*P*
.1713	.0293	.3735	.8221	5.0000	136.0000	.5359

Table 5-38. Hypothesis 4 - Model Summary - Outcome Variable CustSafO

Model

	coeff	se	t	p	LLCI	ULCI
Constant	3.8078	.2726	13.9670	.0000	3.2687	4.3470
FinAdopt	.0357	.0231	1.5449	.1247	-.0100	.0815
Gender	.0688	.1074	.6406	.5229	-.1436	.2812
Age	.0072	.0618	.1165	.9074	-.1150	.1294
Education	-.1005	.0766	-1.3121	.1917	-.2519	.0510
Income	-.0094	.0540	-.1744	.8618	-.1161	.0973

Table 5-39. Hypothesis 4 - Model - Outcome Variable CustSafO

Model Summary – Outcome Variable: CustLoy

R	*R-sq*	*MSE*	*F*	*df1*	*df2*	*P*
.2928	.0857	.4085	2.1094	6.0000	135.0000	.0561

Table 5-40. Hypothesis 4 - Model Summary - Outcome Variable: CustLoy

Model

	coeff	*se*	*t*	*p*	*LLCI*	*ULCI*
Constant	2.4891	.4448	5.5956	.0000	1.6094	3.3689
FinAdopt	.0192	.0244	.7889	.4316	-.0290	.0675

CustSatO	.2532	.0897	2.8237	.0055	.0759	.4306
Gender	.0911	.1125	.8094	.4197	-.1314	.3136
Age	.0148	.0646	.2297	.8187	-.1130	.1427
Education	-.0889	.0806	-1.1030	.2720	-.2482	.0705
Income	-.0240	.0564	-.4256	.6710	-.1356	.0876

Table 5-41. Hypothesis 4 - Model - Outcome Variable CustLoy

Direct effect of X on Y

Effect	*se*	*t*	*p*	*LLCI*	*ULCI*
.0192	.0244	.7889	.4316	-.0290	.0675

Table 5-42. Hypothesis 4 - Direct Effect of X on Y

Indirect effect(s) of X on Y

	Effect	*BootSE*	*BootLLCI*	*BootULCI*
CustSatO	.0090	.0087	-.0041	.0297

Table 5-43. Hypothesis 4 - Indirect Effect of X on Y

5.6.2.2.1. Direct Effect

Table 5-42 presents the direct effect of FinTech Adoption on Customer Loyalty. The direct effect was found to be 0.0192, with a standard error (SE) of 0.0244. This effect was not statistically significant, as indicated by a p-value of 0.4316.

5.6.2.2.2. Indirect Effect

Table 5-43 shows the indirect effect of FinTech Adoption on Customer Loyalty through Customer Satisfaction Overall, using the bootstrapping method. The indirect effect (a x b) was determined to be 0.0090, with a bootstrap standard error (BootSE) of 0.0087. The 95% bootstrap confidence interval ranged from (BootLLCI) -0.0041 to (BootULCI) 0.0297. Since this interval includes zero, the indirect effect is not statistically significant.

5.6.2.2.2. Total Effect

The total effect of FinTech Adoption on Customer Loyalty was determined to be 0.0192, which includes both direct and indirect effects. The mediation analysis indicated that the direct effect of FinTech Adoption on Customer Loyalty was not statistically significant. Similarly, the indirect effect through Customer Satisfaction Overall was also not significant. Consequently, the total effect of FinTech Adoption on Customer Loyalty remained non-significant. Therefore, it can be concluded that Customer Satisfaction Overall does not mediate the relationship between FinTech Adoption and Customer Loyalty. This suggests that FinTech Adoption does not significantly influence Customer Loyalty, either

directly or indirectly through Customer Satisfaction Overall, when controlling for variables such as gender, age, education, and income.

5.7. Hypothesis 5 - Demographics on FinTech Adoption, Customer Satisfaction, and Loyalty

This hypothesis examines whether demographic factors moderate the relationship between FinTech service Adoption and Customer Loyalty, with Customer Satisfaction serving as a mediating variable. The aim is to determine how different demographic characteristics, such as age, gender, income level, and educational background, influence the strength and direction of the relationship between FinTech Adoption and Customer Satisfaction, and ultimately how these factors impact Customer Loyalty. Understanding these moderating effects can provide deeper insights into the diverse ways customers respond to FinTech services based on the demographic factors.

5.7.1. Demographics on FinTech Adoption, Customer Satisfaction FinTech, and Loyalty

This section explores how demographic factors affect the relationship between FinTech Adoption and Customer Satisfaction specific to FinTech services, and subsequently, Customer Loyalty. It aims to identify demographic characteristics that influence the degree of satisfaction with FinTech services and their impact on Customer Loyalty.

5.7.1.1. Assessments of Assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include normality, linearity, homoscedasticity, independence and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.7.1.1.1. Linearity

Linearity in regression analysis refers to the assumption that the relationship between the independent variables and the dependent variable is linear. This was assessed by examining scatterplots of standardized residuals against standardized predicted values in Figure 5-26 and Figure 5-27. For the models analyzing Customer Satisfaction and Customer Loyalty, the scatterplots showed a random distribution of points. This indicated that there is a linear relationship between the predictors (such as FinTech Adoption, Gender, Age, Income, Education, and their interactions) and the dependent variables (Customer_Satisfaction_FinTech and Customer_Loyalty).

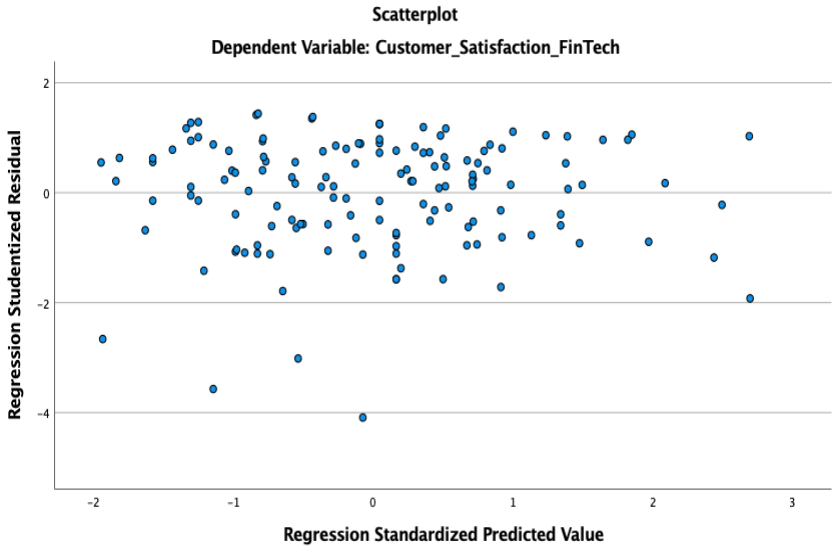

Figure 5-26. Hypothesis 5 Customer Satisfaction FinTech - Regression Standardized Predicted Value x Regression Studentized Residual - Scatterplot

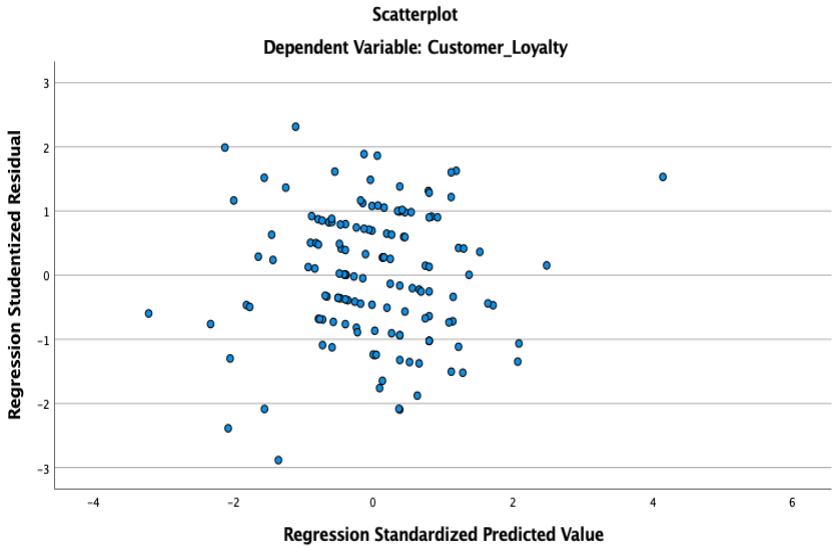

Figure 5-27. Hypothesis 5 Customer Loyalty - Regression Standardized Predicted Value x Regression Studentized Residual – Scatterplot

5.7.1.1.2. Independence of Errors

The assumption of independence of errors means that the residuals (errors) are not correlated with each other. This was assessed using the Durbin-Watson statistic, as shown in Table 5-44 and Table 5-45. For the Customer Satisfaction model, the Durbin-Watson statistic was 1.988, which is close to 2, indicating that there is no autocorrelation in the residuals. Similarly, for the Customer Loyalty model, the Durbin-Watson statistic was 1.809, also suggesting that the residuals are independent.

Model Summary[c]					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Durbin-Watson*
1	.174[a]	0,030	-0,005	0,71757	
2	.187[b]	0,035	-0,023	0,72390	1,988

a. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered

b. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered, FinTecht_Adoption_X_Age, FinTecht_Adoption_X_Education, FinTecht_Adoption_X_Income

c. Dependent Variable: Customer_Satisfaction_FinTech

Table 5-44. Hypothesis 5 Customer Satisfaction FinTech - Model Summary

Model Summary[c]					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Durbin-Watson*
1	.178[a]	0,032	-0,004	0,65532	
2	.217[b]	0,047	-0,010	0,65742	1,809

a. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered

b. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered, FinTecht_Adoption_X_Age, FinTecht_Adoption_X_Education, FinTecht_Adoption_X_Income

c. Dependent Variable: Customer_Loyalty

Table 5-45. Hypothesis 5 Customer Loyalty - Model Summary

5.7.1.1.3. Homoscedasticity

Homoscedasticity implies that the variance of the errors is constant across all levels of the independent variables. This was assessed by examining scatterplots of standardized residuals versus standardized predicted values. For the Customer Satisfaction Overall and the Customer Satisfaction FinTech, the scatterplots in Figure 5-26 and Figure 5-27 did not display any pattern or funnel shape, indicating that the errors have constant variance. The same was true for the Customer Loyalty model, where the scatterplot in Figure 5-27 showed no discernible pattern, supporting the presence of homoscedasticity.

5.7.1.1.4. Multicollinearity

Multicollinearity occurs when independent variables in a regression model are highly correlated with each other. This can inflate the standard errors of the coefficients and make it difficult to assess the individual impact of each predictor. Multicollinearity was assessed using Tolerance and Variance Inflation Factor (VIF) values. These values can be found in Table 5-46 and Table 5-47. For the Customer Satisfaction model, all VIF values were below 10, and tolerance values were above 0.1, indicating that multicollinearity is not a concern. Specific VIF values included FinTech Adoption (1.097), Gender

(1.106), Age (1.401), Income (1.460), and Education (1.111). The interaction terms also had VIF values below 10. For the Customer Loyalty model, the VIF values were also below 10, with tolerance values above 0.1, suggesting no issues with multicollinearity. Specific VIF values for this model were similar, with FinTech Adoption (1.097), Gender (1.106), Age (1.401), Income (1.460), and Education (1.111).

Coefficients[a]								
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	*(Constant)*	4,067	0,188		21,592	0,000		
	FinTech Adoption	-0,012	0,027	-0,038	-0,424	0,672	0,904	1,106
	Gender1	0,200	0,126	0,140	1,586	0,115	0,912	1,097
	Age1_centered	0,014	0,073	0,019	0,191	0,849	0,714	1,401
	Income1_centered	0,068	0,063	0,109	1,070	0,287	0,685	1,460
	Education1_centered	0,032	0,090	0,032	0,359	0,720	0,900	1,111
2	*(Constant)*	4,086	0,192		21,266	0,000		
	FinTech Adoption	-0,015	0,028	-0,050	-0,546	0,586	0,856	1,168
	Gender1	0,201	0,129	0,141	1,561	0,121	0,889	1,125
	Age1_centered	-0,122	0,198	-0,168	-0,615	0,540	0,098	10,244
	Income1_centered	0,108	0,192	0,174	0,564	0,573	0,076	13,174
	Education1_centered	0,070	0,255	0,069	0,273	0,785	0,114	8,766
	FinTecht_Adoption_X_Age	0,021	0,029	0,209	0,734	0,464	0,089	11,218
	FinTecht_Adoption_X_Income	-0,007	0,028	-0,074	-0,232	0,817	0,071	14,063
	FinTecht_Adoption_X_Education	-0,006	0,039	-0,035	-0,140	0,889	0,113	8,856

a. Dependent Variable: Customer_Satisfaction_FinTech

Table 5-46. Hypothesis 5 Customer Satisfaction FinTech - Coefficients

Coefficients[a]								
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	*(Constant)*	3,330	0,172		19,362	0,000		
	FinTech Adoption	0,028	0,025	0,101	1,141	0,256	0,904	1,106
	Gender1	0,108	0,115	0,083	0,942	0,348	0,912	1,097
	Age1_centered	0,017	0,066	0,025	0,252	0,802	0,714	1,401
	Income1_centered	-0,026	0,058	-0,047	-0,456	0,649	0,685	1,460
	Education1_centered	-0,114	0,082	-0,124	-1,392	0,166	0,900	1,111
2	*(Constant)*	3,327	0,174		19,066	0,000		
	FinTech Adoption	0,031	0,026	0,111	1,214	0,227	0,856	1,168
	Gender1	0,109	0,117	0,083	0,928	0,355	0,889	1,125
	Age1_centered	-0,137	0,180	-0,206	-0,762	0,448	0,098	10,244
	Income1_centered	0,201	0,174	0,355	1,155	0,250	0,076	13,174
	Education1_centered	-0,091	0,231	-0,099	-0,395	0,693	0,114	8,766
	FinTecht_Adoption_X_Age	0,025	0,027	0,265	0,936	0,351	0,089	11,218
	FinTecht_Adoption_X_Income	-0,036	0,026	-0,443	-1,396	0,165	0,071	14,063
	FinTecht_Adoption_X_Education	-0,005	0,036	-0,035	-0,137	0,891	0,113	8,856

a. Dependent Variable: Customer_Loyalty

Table 5-47. Hypothesis 5 Customer Loyalty - Coefficients

5.7.1.1.5. Conclusion

The assessment of assumptions for the regression models examining the influence of demographic factors on the relationship between FinTech Adoption, Customer Satisfaction with FinTech services, and Customer Loyalty confirms that the models meet the necessary criteria for reliable and valid results. Linearity was verified through scatterplots of standardized residuals against standardized predicted values, which showed a random distribution of points, indicating that the relationship between the independent variables (such as FinTech Adoption, Gender, Age, Income, and Education) and the dependent variables (Customer Satisfaction with FinTech and Customer Loyalty) is linear. The

independence of errors was assessed using the Durbin-Watson statistic, with values of 1.988 for the Customer Satisfaction model and 1.809 for the Customer Loyalty model. These values, close to 2, suggest that the residuals are independent and indicate no significant autocorrelation. Homoscedasticity was evaluated by examining scatterplots of standardized residuals versus standardized predicted values. These plots exhibited no discernible patterns or funnel shapes, confirming that the variance of the residuals is consistent across all levels of the independent variables, thus supporting the assumption of homoscedasticity for both models. Multicollinearity was assessed through Variance Inflation Factor (VIF) and Tolerance values. In both models, all VIF values were below 10, and tolerance values were above 0.1, with specific VIF values for FinTech Adoption (1.097), Gender (1.106), Age (1.401), Income (1.460), and Education (1.111). Interaction terms also showed similar results, indicating that multicollinearity is not a significant concern. Overall, the assumptions of linearity, independence of errors, homoscedasticity, and multicollinearity are adequately met, validating the investigation into how demographic factors affect the relationship between FinTech Adoption, Customer Satisfaction with FinTech services, and Customer Loyalty.

5.7.1.2. Results

The hypothesis that demographic factors influence the relationship between FinTech Adoption, Customer Satisfaction, and Customer Loyalty was tested through regression analyses.

5.7.1.2.1. Customer Satisfaction

The regression model in Table 5-48 for Customer Satisfaction indicated that the predictors, including FinTech Adoption, demographic factors (Gender, Age, Income, Education), and their interactions, explained a very small portion of the variance in Customer_Satisfaction_FinTech, with an R Square value of 0.035. This means that only 3.5% of the variation in Customer Satisfaction could be explained by the model. The adjusted R Square was -0.023, which further indicates a very weak model. None of the predictors, including FinTech Adoption and its interactions with demographic variables, were statistically significant at the $p < 0.05$ level. Table 5-49 presents the specific coefficients and p-values as follows: FinTech Adoption (B = -0.012, p = 0.672), Gender (B = 0.200, p = 0.115), Age (B = 0.014, p = 0.849), Income (B = 0.068, p = 0.287), and Education (B = 0.032, p = 0.720). The interaction terms also had p-values greater than 0.05, indicating no significant effects on Customer Satisfaction.

Model Summary

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.174[a]	0,030	-0,005	0,71757
2	.187[b]	0,035	-0,023	0,72390

a. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered

b. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered, FinTecht_Adoption_X_Age, FinTecht_Adoption_X_Education, FinTecht_Adoption_X_Income

Table 5-48. Hypothesis 5 Customer Satisfaction FinTech - Model Summary

Coefficients[a]						
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*
		B	*Std. Error*	*Beta*		
1	(Constant)	4,067	0,188		21,592	0,000
	FinTech Adoption	-0,012	0,027	-0,038	-0,424	0,672
	Gender1	0,200	0,126	0,140	1,586	0,115
	Age1_centered	0,014	0,073	0,019	0,191	0,849
	Income1_centered	0,068	0,063	0,109	1,070	0,287
	Education1_centered	0,032	0,090	0,032	0,359	0,720
2	(Constant)	4,086	0,192		21,266	0,000
	FinTech Adoption	-0,015	0,028	-0,050	-0,546	0,586
	Gender1	0,201	0,129	0,141	1,561	0,121
	Age1_centered	-0,122	0,198	-0,168	-0,615	0,540
	Income1_centered	0,108	0,192	0,174	0,564	0,573
	Education1_centered	0,070	0,255	0,069	0,273	0,785
	FinTecht_Adoption_X_Age	0,021	0,029	0,209	0,734	0,464
	FinTecht_Adoption_X_Income	-0,007	0,028	-0,074	-0,232	0,817
	FinTecht_Adoption_X_Education	-0,006	0,039	-0,035	-0,140	0,889

a. Dependent Variable: Customer_Satisfaction_FinTech

Table 5-49. Hypothesis 5 Customer Satisfaction FinTech - Coefficients

5.7.1.2.2. Customer Loyalty

The regression model in Table 5-50 for Customer Loyalty explained 4.7% of the variance, with an R square value of 0.047. The adjusted R Square was -0.010, indicating a weak model. None of the predictors or their interactions were statistically significant at the $p < 0.05$ level. Table 5-51 presents the specific coefficients and p-values as follows: FinTech Adoption (B = 0.028, p = 0.256), Gender (B = 0.108, p = 0.348), Age (B = 0.017, p = 0.802), Income (B = -0.026, p = 0.649), and Education (B = -

0.114, p = 0.166). The interaction terms also had p-values greater than 0.05, indicating no significant effects on Customer Loyalty.

Based on the regression analyses, the demographic factors (Gender, Age, Income, Education) and their interactions with FinTech Adoption do not significantly impact Customer Satisfaction or Customer Loyalty. The models exhibited low explanatory power, with R^2 values of 0.035 for Customer Satisfaction and 0.047 for Customer Loyalty. Additionally, none of the predictors were statistically significant. This suggests that these demographic factors and their interactions do not play a substantial role in influencing Customer Satisfaction or loyalty in the context of FinTech Adoption. Therefore, the hypothesis that demographic factors significantly influence the relationship between FinTech Adoption, Customer Satisfaction, and Customer Loyalty is not supported by the data. Other factors not included in the model may have a more significant impact on these outcomes.

Model Summary

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.178[a]	0,032	-0,004	0,65532
2	.217[b]	0,047	-0,010	0,65742

a. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered

b. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered, FinTecht_Adoption_X_Age, FinTecht_Adoption_X_Education, FinTecht_Adoption_X_Income

Table 5-50. Hypothesis 5 Customer Loyalty - Model Summary

Coefficients[a]

Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*
		B	*Std. Error*	*Beta*		
1	(Constant)	3,330	0,172		19,362	0,000
	FinTech Adoption	0,028	0,025	0,101	1,141	0,256
	Gender1	0,108	0,115	0,083	0,942	0,348
	Age1_centered	0,017	0,066	0,025	0,252	0,802
	Income1_centered	-0,026	0,058	-0,047	-0,456	0,649
	Education1_centered	-0,114	0,082	-0,124	-1,392	0,166
2	(Constant)	3,327	0,174		19,066	0,000
	FinTech Adoption	0,031	0,026	0,111	1,214	0,227

	Gender1	0,109	0,117	0,083	0,928	0,355
	Age1_centered	-0,137	0,180	-0,206	-0,762	0,448
	Income1_centered	0,201	0,174	0,355	1,155	0,250
	Education1_centered	-0,091	0,231	-0,099	-0,395	0,693
	FinTecht_Adoption_X_Age	0,025	0,027	0,265	0,936	0,351
	FinTecht_Adoption_X_Income	-0,007	0,028	-0,074	-0,232	0,817
	FinTecht_Adoption_X_Education	-0,006	0,039	-0,035	-0,140	0,889

a. Dependent Variable: Customer_Loyalty

Table 5-51. Hypothesis 5 Customer Loyalty - Coefficients

5.7.2. Demographics on FinTech Adoption, Customer Satisfaction Overall, and Loyalty

This section explores how demographic factors affect the relationship between FinTech Adoption and Customer Satisfaction Overall, and subsequently, Customer Loyalty. It aims to identify demographic characteristics that influence the degree of overall satisfaction and their impact on Customer Loyalty.

5.7.2.1. Assessment of Assumptions

The assessment of assumptions is essential to the validity of statistical analyses, as faulty assumptions can lead to misleading results. Important assumptions include linearity, independence of error, homoscedasticity, and no multicollinearity. These assumptions are assessed using graphical methods, statistical tests and diagnostic statistics.

5.7.2.1.1. Linearity

Linearity in regression analysis refers to the assumption that the relationship between the independent variables and the dependent variable is linear. This was assessed by examining scatterplots of standardized residuals against standardized predicted values. For both Customer Satisfaction and Customer Loyalty models, the scatterplots in Figure 5-28 and Figure 5-29 exhibited a random distribution of points, indicating a linear relationship between the predictors and the dependent variables. Specifically, the scatterplots did not show any systematic patterns, which supports the assumption of linearity.

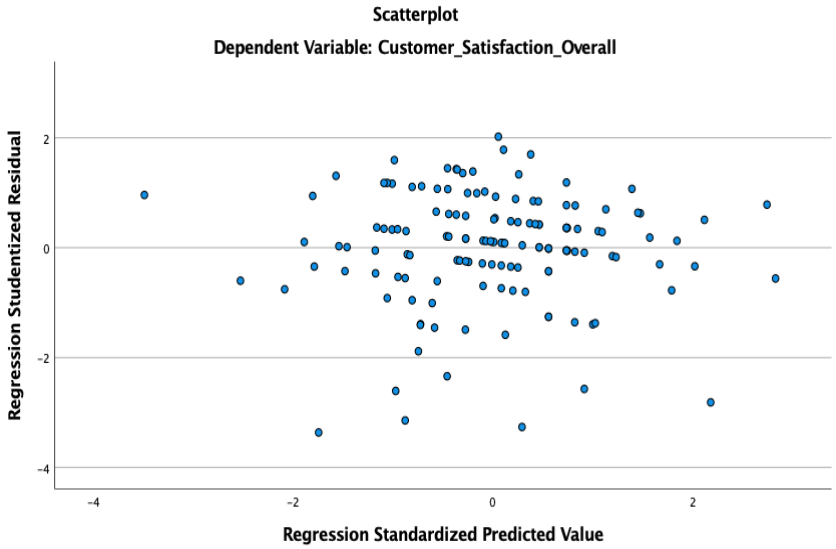

Figure 5-28. Hypothesis 5 Customer Satisfaction Overall - Regression Standardized Predicted Value x Regression Studentized Residual – Scatterplot

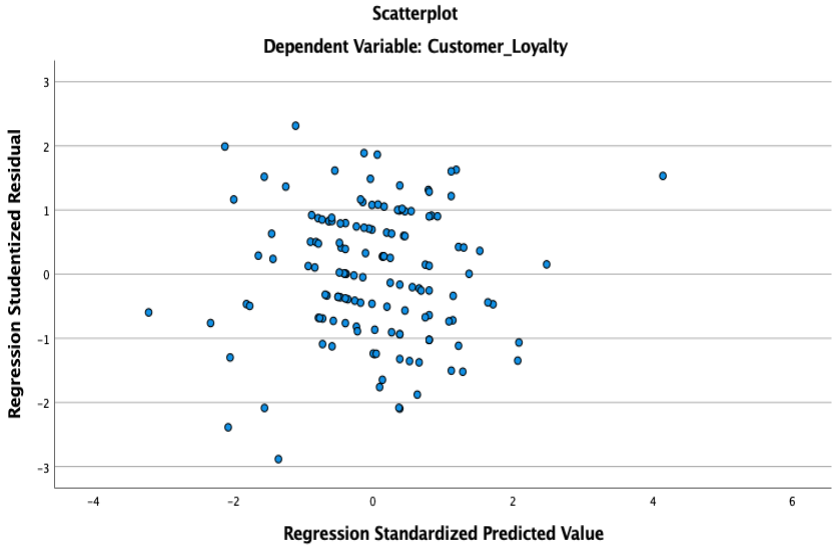

Figure 5-29. Hypothesis 5 Customer Loyalty - Regression Standardized Predicted Value x Regression Studentized Residual – Scatterplot

5.7.2.1.2. Independence of Errors

The independence of errors assumption means that the residuals (errors) are not correlated with each other. This was assessed using the Durbin-Watson statistic, as detailed in Table 5-52 and Table 5-53. For the Customer Satisfaction model, the Durbin-Watson statistic was 2.270, which is very close to 2, indicating that there is no autocorrelation in the residuals. Similarly, for the Customer Loyalty model, the Durbin-Watson statistic was 1.809, also suggesting that the residuals in this model are independent.

Model Summary[c]					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Durbin-Watson*
1	.171[a]	0,029	-0,006	0,61117	
2	.215[b]	0,046	-0,011	0,61262	2,270

a. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered

b. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered, FinTecht_Adoption_X_Age, FinTecht_Adoption_X_Education, FinTecht_Adoption_X_Income

c. Dependent Variable: Customer_Satisfaction_ Overall

Table 5-52. Hypothesis 5 Customer Satisfaction Overall - Model Summary

Model Summary[c]					
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Durbin-Watson*
1	.178[a]	0,032	-0,004	0,65532	
2	.217[b]	0,047	-0,010	0,65742	1,809

a. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered

b. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered, FinTecht_Adoption_X_Age, FinTecht_Adoption_X_Education, FinTecht_Adoption_X_Income

c. Dependent Variable: Customer_Loyalty

Table 5-53. Hypothesis Customer Loyalty - Model Summary

5.7.2.1.3. Homoscedasticity

Homoscedasticity implies that the variance of the errors is constant across all levels of the independent variables. This was assessed by examining scatterplots of standardized residuals versus standardized predicted values. For the Customer Satisfaction Overall in Figure 5-28, the scatterplot did not display any pattern or funnel shape, indicating that the errors have constant variance (homoscedasticity). The same was true for the Customer Loyalty model in Figure 5-29, where the scatterplot showed no discernible pattern, supporting the presence of homoscedasticity.

5.7.2.1.4. Multicollinearity

Multicollinearity occurs when independent variables in a regression model are highly correlated with each other. This can inflate the standard errors of the coefficients and make it difficult to assess the individual impact of each predictor. Multicollinearity was evaluated using Tolerance and Variance Inflation Factor (VIF) values, as presented in Table 5-54 and Table 5-55. For the Customer Satisfaction model, all VIF values were below 10, and tolerance values were above 0.1, indicating that multicollinearity is not a concern. Specific VIF values included FinTech Adoption (1.097), Gender

(1.106), Age (1.401), Income (1.460), and Education (1.111). The interaction terms also had VIF values below 10. For the Customer Loyalty model, the VIF values were also below 10, with tolerance values above 0.1, suggesting no issues with multicollinearity. Specific VIF values for this model were similar, with FinTech Adoption (1.097), Gender (1.106), Age (1.401), Income (1.460), and Education (1.111).

Coefficients[a]								
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*	
		B	*Std. Error*	*Beta*			*Tolerance*	*VIF*
1	*(Constant)*	3,690	0,160		23,004	0,000		
	FinTech Adoption	0,036	0,023	0,137	1,545	0,125	0,904	1,106
	Gender1	0,069	0,107	0,057	0,641	0,523	0,912	1,097
	Age1_centered	0,007	0,062	0,012	0,117	0,907	0,714	1,401
	Income1_centered	-0,009	0,054	-0,018	-0,174	0,862	0,685	1,460
	Education1_centered	-0,100	0,077	-0,117	-1,312	0,192	0,900	1,111
2	*(Constant)*	3,690	0,163		22,692	0,000		
	FinTech Adoption	0,036	0,024	0,138	1,506	0,134	0,856	1,168
	Gender1	0,059	0,109	0,049	0,542	0,589	0,889	1,125
	Age1_centered	0,199	0,167	0,323	1,190	0,236	0,098	10,244
	Income1_centered	-0,236	0,162	-0,447	-1,453	0,149	0,076	13,174
	Education1_centered	-0,030	0,216	-0,035	-0,141	0,888	0,114	8,766
	FinTecht_Adoption_X_Age	-0,031	0,025	-0,353	-1,245	0,215	0,089	11,218
	FinTecht_Adoption_X_Income	0,036	0,024	0,470	1,481	0,141	0,071	14,063
	FinTecht_Adoption_X_Education	-0,011	0,033	-0,083	-0,330	0,742	0,113	8,856

a. Dependent Variable: Customer_Satisfaction_Overall

Table 5-54. Hypothesis 5 Customer Satisfaction Overall – Coefficients

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3,330	0,172		19,362	0,000		
	FinTech Adoption	0,028	0,025	0,101	1,141	0,256	0,904	1,106
	Gender1	0,108	0,115	0,083	0,942	0,348	0,912	1,097
	Age1_centered	0,017	0,066	0,025	0,252	0,802	0,714	1,401
	Income1_centered	-0,026	0,058	-0,047	-0,456	0,649	0,685	1,460
	Education1_centered	-0,114	0,082	-0,124	-1,392	0,166	0,900	1,111
2	(Constant)	3,327	0,174		19,066	0,000		
	FinTech Adoption	0,031	0,026	0,111	1,214	0,227	0,856	1,168
	Gender1	0,109	0,117	0,083	0,928	0,355	0,889	1,125
	Age1_centered	-0,137	0,180	-0,206	-0,762	0,448	0,098	10,244
	Income1_centered	0,201	0,174	0,355	1,155	0,250	0,076	13,174
	Education1_centered	-0,091	0,231	-0,099	-0,395	0,693	0,114	8,766
	FinTecht_Adoption_X_Age	0,025	0,027	0,265	0,936	0,351	0,089	11,218
	FinTecht_Adoption_X_Income	-0,036	0,026	-0,443	-1,396	0,165	0,071	14,063
	FinTecht_Adoption_X_Education	-0,005	0,036	-0,035	-0,137	0,891	0,113	8,856

a. Dependent Variable: Customer_Loyalty

Table 5-55. Hypothesis 5 Customer Loyalty – Coefficients

5.7.2.1.5. Conclusion

The assessment of assumptions for the regression models investigating the influence of demographic factors on the relationship between FinTech Adoption, Customer Satisfaction with FinTech services, and Customer Loyalty shows that the models meet the necessary criteria for reliable and valid results. Linearity was confirmed by examining scatterplots of standardized residuals against standardized predicted values, which displayed a random distribution of points. This indicates that the relationship between the independent variables (such as FinTech Adoption, Gender, Age, Income, and Education) and the dependent variables (Customer Satisfaction with FinTech and Customer Loyalty) is linear. The

independence of errors was evaluated using the Durbin-Watson statistic, with values of 2.270 for the Customer Satisfaction model and 1.809 for the Customer Loyalty model. Both values are close to 2, suggesting that the residuals are independent and indicating no significant autocorrelation. Homoscedasticity was assessed by analyzing scatterplots of standardized residuals versus standardized predicted values. These plots showed no discernible patterns or funnel shapes, indicating that the variance of the residuals is consistent across all levels of the independent variables, thus supporting the assumption of homoscedasticity for both models. Multicollinearity was examined through Variance Inflation Factor (VIF) and Tolerance values. In both models, all VIF values were below 10, and tolerance values were above 0.1, with specific VIF values for FinTech Adoption, Gender, Age, Income, and Education indicating no significant multicollinearity. Overall, the assumptions of linearity, independence of errors, homoscedasticity, and absence of multicollinearity are adequately met, validating the investigation into how demographic factors affect the relationship between FinTech Adoption, Customer Satisfaction with FinTech services, and Customer Loyalty.

5.7.2.2. Results

The hypothesis that demographic factors influence the relationship between FinTech Adoption, Customer Satisfaction, and Customer Loyalty was tested through regression analyses.

5.7.2.2.1. Customer Satisfaction

The regression model shown for Customer Satisfaction, detailed in Table 5-56, shows that the predictors, including FinTech Adoption, demographic factors (Gender, Age, Income, Education), and their interactions, explained a small portion of the variance in Customer Satisfaction Overall, with an R^2 value of 0.046. This indicates that only 4.6% of the variation in Customer Satisfaction could be explained by the model. The adjusted R^2 value of -0.011 further highlights the model's limited explanatory power. None of the predictors, including FinTech Adoption and its interactions with demographic variables, were statistically significant at the $p < 0.05$ level. Specially, the coefficients and p-values reported in Table 5-57 are as follows: FinTech Adoption (B = 0.036, p = 0.125), Gender (B = 0.069, p = 0.523), Age (B = 0.007, p = 0.907), Income (B = -0.009, p = 0.862), and Education (B = -0.100, p = 0.192). The interaction terms also displayed p-values above 0.05, indicating no significant impact on Customer Satisfaction.

Model Summary

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.171[a]	0,029	-0,006	0,61117
2	.215[b]	0,046	-0,011	0,61262

a. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered

b. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered, FinTecht_Adoption_X_Age, FinTecht_Adoption_X_Education, FinTecht_Adoption_X_Income

Table 5-56. Hypothesis 5 Customer Satisfaction Overall - Model Summary

Coefficients[a]						
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*
		B	*Std. Error*	*Beta*		
1	(Constant)	3,690	0,160		23,004	0,000
	FinTech Adoption	0,036	0,023	0,137	1,545	0,125
	Gender1	0,069	0,107	0,057	0,641	0,523
	Age1_centered	0,007	0,062	0,012	0,117	0,907
	Income1_centered	-0,009	0,054	-0,018	-0,174	0,862
	Education1_centered	-0,100	0,077	-0,117	-1,312	0,192
2	(Constant)	3,690	0,163		22,692	0,000
	FinTech Adoption	0,036	0,024	0,138	1,506	0,134
	Gender1	0,059	0,109	0,049	0,542	0,589
	Age1_centered	0,199	0,167	0,323	1,190	0,236
	Income1_centered	-0,236	0,162	-0,447	-1,453	0,149
	Education1_centered	-0,030	0,216	-0,035	-0,141	0,888
	FinTecht_Adoption_X_Age	-0,031	0,025	-0,353	-1,245	0,215
	FinTecht_Adoption_X_Income	0,036	0,024	0,470	1,481	0,141
	FinTecht_Adoption_X_Education	-0,011	0,033	-0,083	-0,330	0,742

a. Dependent Variable: Customer_Satisfaction_Overall

Table 5-57. Hypothesis 5 Customer Satisfaction Overall – Coefficients

5.7.2.2.2. Customer Loyalty

The regression model shown for Customer Loyalty, detailed in Table 5-58, explained 4.7% of the variance, with an R^2 value of 0.047. The adjusted R Square was -0.010, indicating a weak model. None of the predictors or their interactions were statistically significant at the $p < 0.05$ level. Specially, the coefficients and p-values reported in Table 5-59, are as follows: FinTech Adoption (B = 0.028, p = 0.256), Gender (B = 0.108, p = 0.348), Age (B = 0.017, p = 0.802), Income (B = -0.026, p = 0.649), and Education (B = -0.114, p = 0.166). The interaction terms also had p-values greater than 0.05, indicating

no significant effects on Customer Loyalty. Based on the regression analyses, the demographic factors (Gender, Age, Income, Education) and their interactions with FinTech Adoption do not significantly impact Customer Satisfaction or Customer Loyalty. The models exhibited low explanatory power, with R^2 values of 0.046 for Customer Satisfaction and 0.047 for Customer Loyalty. Additionally, none of the predictors were statistically significant. This suggests that these demographic factors and their interactions do not play a substantial role in influencing Customer Satisfaction or loyalty in the context of FinTech Adoption. Therefore, the hypothesis that demographic factors significantly influence the relationship between FinTech Adoption, Customer Satisfaction, and Customer Loyalty is not supported by the data. Other factors not included in the model may have a more significant impact on these outcomes.

Model Summary

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.178[a]	0,032	-0,004	0,65532
2	.217[b]	0,047	-0,010	0,65742

a. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered

b. Predictors: (Constant), Education1_centered, Age1_centered, Gender1, FinTech Adoption, Income1_centered, FinTecht_Adoption_X_Age, FinTecht_Adoption_X_Education, FinTecht_Adoption_X_Income

Table 5-58. Hypothesis 5 Customer Loyalty - Model Summary

Coefficients[a]						
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*
		B	*Std. Error*	*Beta*		
1	(Constant)	3,330	0,172		19,362	0,000
	FinTech Adoption	0,028	0,025	0,101	1,141	0,256
	Gender1	0,108	0,115	0,083	0,942	0,348
	Age1_centered	0,017	0,066	0,025	0,252	0,802
	Income1_centered	-0,026	0,058	-0,047	-0,456	0,649
	Education1_centered	-0,114	0,082	-0,124	-1,392	0,166
2	(Constant)	3,327	0,174		19,066	0,000
	FinTech Adoption	0,031	0,026	0,111	1,214	0,227
	Gender1	0,109	0,117	0,083	0,928	0,355

	Age1_centered	-0,137	0,180	-0,206	-0,762	0,448
	Income1_centered	0,201	0,174	0,355	1,155	0,250
	Education1_centered	-0,091	0,231	-0,099	-0,395	0,693
	FinTecht_Adoption_X_Age	0,025	0,027	0,265	0,936	0,351
	FinTecht_Adoption_X_Income	-0,036	0,026	-0,443	-1,396	0,165
	FinTecht_Adoption_X_Education	-0,005	0,036	-0,035	-0,137	0,891

a. Dependent Variable: Customer_Loyalty

Table 5-59. Hypothesis 5 Customer Loyalty – Coefficients

6. Conclusion

This research provides critical insights into the impact of FinTech adoption on customer satisfaction and loyalty within the Dutch banking sector. The central research question addressed was:

How does the adoption of FinTech services affect customer satisfaction and customer loyalty in the Dutch banking sector?

To answer this question, five hypotheses were formulated and tested using various regression models, incorporating both FinTech-specific variables and demographic control variables. The analysis revealed that the adoption of FinTech services by banks does not significantly enhance customer satisfaction. Despite the growing integration of FinTech solutions, the regression models demonstrated that FinTech adoption did not emerge as a significant predictor of customer satisfaction. This conclusion is supported by the low R^2 values and the lack of statistical significance in the regression coefficients associated with FinTech adoption across multiple models. Even after adjusting for demographic variables such as gender, age, education, and income, the impact of FinTech adoption on customer satisfaction remained statistically insignificant. Furthermore, the relationship between FinTech adoption and customer loyalty was found to be non-significant. The regression analysis showed that while the coefficients for FinTech adoption and customer loyalty were positive, they did not reach statistical significance. This indicates that FinTech adoption alone is insufficient to drive customer loyalty, and other factors may have a more substantial influence on customer retention within the banking sector. The study also investigated whether customer satisfaction mediates the relationship between FinTech adoption and customer loyalty. The mediation analysis, conducted using the PROCESS macro, assessed direct, indirect, and total effects. The results indicated that the direct effect of FinTech adoption on customer loyalty, without considering customer satisfaction as a mediator, was positive but not statistically significant. The indirect effect, representing the influence of FinTech adoption on customer loyalty through customer satisfaction, was also found to be insignificant. The total effect, which combines both direct and indirect effects, similarly lacked statistical significance. These findings suggest that FinTech adoption does not have a significant impact on customer loyalty, and customer satisfaction does not act as a meaningful mediator in this relationship. Additionally, the research examined the influence of demographic factors (gender, age, education, and income) on the relationship between FinTech adoption, customer satisfaction, and loyalty. The results indicated that these demographic variables did not significantly alter the relationships under investigation. Although demographic factors were included in the regression models, their influence on customer satisfaction and loyalty outcomes was insignificant.

In conclusion, the adoption of FinTech services within the Dutch banking sector does not have a significant effect on either customer satisfaction or customer loyalty. The mediation analysis further suggests that customer satisfaction does not mediate the relationship between FinTech adoption and

customer loyalty in a meaningful way. Moreover, demographic factors such as gender, age, education, and income do not significantly influence these relationships. These findings underscore the need for further research to explore other variables that may contribute more significantly to customer satisfaction and loyalty in the context of FinTech adoption.

7. Discussion

This study aimed to investigate the impact of FinTech services on customer satisfaction and loyalty within the Dutch banking sector. Contrary to the initial hypotheses, the findings reveal that the adoption of FinTech services does not significantly influence customer satisfaction or loyalty, even when accounting for demographic factors such as age, gender, education, and income. A possible explanation is that Dutch banking services already meet customer expectations effectively, leaving little room for FinTech services to make a noticeable difference. The high level of satisfaction with traditional banking services may, therefore, limit the potential impact of FinTech services in this context.

Several limitations should be acknowledged in interpreting these findings. First, the sample was restricted to students from the University of Twente, which limits the generalizability of the results. The student population may not fully represent the broader demographic diversity of the Dutch banking sector, particularly in terms of income levels, financial needs, and digital proficiency. This homogeneity may have influenced the findings, as students may have different expectations and experiences with FinTech services compared to the general population. Second, the study relied on self-reported data collected through an online survey, which may be subject to biases such as social desirability and recall bias. Respondents may have overestimated their satisfaction or loyalty, or may not accurately recall their interactions with FinTech services. Additionally, the cross-sectional design of the study captures only a snapshot in time and does not account for changes in customer satisfaction and loyalty over time as FinTech services continue to evolve. Third, the study focused exclusively on the Dutch banking sector, where the banking infrastructure is highly developed, and customers may already have high baseline satisfaction with traditional banking services. This context may differ significantly from other regions where FinTech services could have a more pronounced impact on customer satisfaction and loyalty due to less mature financial systems or unmet customer needs.

Considering these limitations, future research should focus on several key areas. The highest priority should be given to broadening the sample to include a more representative cross-section of the Dutch population. Expanding the sample to cover different age groups, income levels, and professional backgrounds is crucial. This approach would provide a more comprehensive understanding of how FinTech services impact customer satisfaction and loyalty across diverse demographic groups. By including a more varied population, researchers can obtain insights that are more applicable to the entire Dutch banking sector, making the findings more generalizable and relevant. Another important area for future research is the need for longitudinal studies. Such studies would allow researchers to examine how customer satisfaction and loyalty evolve over time as FinTech services develop and as customers become more familiar with them. Longitudinal research would provide valuable insights into the long-term effects of FinTech adoption on customer behavior. It would also help determine whether initial levels of dissatisfaction or loyalty change as users gain more experience with these technologies.

Understanding these dynamics over time is essential for accurately assessing the impact of FinTech services. Complementary qualitative research, such as in-depth interviews or focus groups, should also be pursued. These qualitative methods could offer deeper insights into the reasons behind the quantitative findings. By exploring the specific aspects of FinTech services that customers value or find lacking, qualitative studies could help refine service offerings to better align with customer needs and preferences. This detailed understanding would be beneficial for both researchers and practitioners aiming to enhance the effectiveness of FinTech services. Lastly, comparative studies should be conducted in other regions with varying levels of banking infrastructure development. By comparing the findings from the Dutch context with those from regions where the financial system is less mature, researchers can determine whether the limited impact of FinTech on customer satisfaction and loyalty observed in this study is unique to the Netherlands or if it can be generalized to other settings. Such comparative analysis is essential for understanding the broader applicability of the findings and for identifying potential areas where FinTech could have a more significant impact.

In conclusion, future research should first and foremost focus on broadening the sample to ensure more representative and generalizable findings. Following this, longitudinal studies and qualitative research should be conducted to explore the long-term effects and underlying reasons for customer behavior. Finally, comparative studies across different regions would help contextualize the findings and assess their broader relevance. By addressing these priorities, future research can provide more detailed and actionable insights into the role of FinTech services in shaping customer satisfaction and loyalty, thereby contributing to both academic knowledge and practical applications in the banking industry.

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Appendix A – Declaration of own work

I declare that the work presented in this document is my own and has been carried out in accordance with the principles of academic integrity. Any information, data, or ideas from other sources have been fully acknowledged and referenced. I have not engaged in any form of plagiarism or unauthorized collaboration. This work has not been previously submitted for assessment in any other course or program.

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