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[Gerandi Matraku](#) *

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Article

Neobank Adoption and Satisfaction: Insights from University Students

Gerandi Matraku 

Fakultät für Wirtschaftswissenschaft, Otto-von-Guericke-Universität Magdeburg; gerandi.matraku@st.ovgu.edu

Abstract: This research explores the influence of nationality and financial literacy on satisfaction with neobank services among university students. Through a comparative analysis between German and international students, the study unveils that international students exhibit significantly higher satisfaction levels, suggesting that cultural differences and the requirement for international financial services play a crucial role [Oishi et al. \(1999\)](#). Although financial literacy was anticipated to have a strong impact, its effect on satisfaction did not reach statistical significance, indicating a nuanced relationship. This perhaps because the study sample of students partaking in the survey was mostly Graduate students in the field of Economics, Finance and Management. Demographic factors such as gender and age were found to be less influential compared to nationality and financial acumen [Gelfand et al. \(2011\)](#). These findings highlight the importance of tailored financial services and the potential of financial education in enhancing neobank satisfaction [Gerrans et al. \(2014\)](#). The study contributes to the understanding of consumer behavior in digital banking, offering insights for neobanks aiming to improve service adoption and customer loyalty within the university student demographic.

Keywords: neobanks; digital banking; financial literacy; fintech; cultural differences; financial services; consumer behavior; service adoption; customer loyalty

1. Introduction

1.1. Introduction to Neobanks

What are neobanks? A neobank is a financial technology (fintech) company that offers banking services online. Neobanks are often startups that provide checking and savings accounts, budgeting tools, and cash advances through a mobile app or website. They are sometimes called challenger banks or digital banks. [Walden and Strohm \(2021\)](#)

1.2. Overview on Neobanks and Fintech

In recent years, neobanks – digital-only banking providers – have rapidly transformed the financial sector, with the global market projected to reach \$5.02 billion by 2026 from just \$0.26 billion in 2017 [Statista \(2023\)](#). As neobanking disrupts traditional retail banking, understanding consumers' perspectives, especially among attractive demographics like university students, grows increasingly relevant. Recent statistics estimate 14% of German consumers use neobanks as their primary account [Statista \(2023\)](#), underscoring these services' rising adoption.

Extant literature reveals multiple drivers of neobank adoption, including perceived innovation, value, and risk [Laukkanen \(2016\)](#) along with the efficiency of digital infrastructure [Koibichuk et al. \(2021\)](#). Further, managing cyber fraud risks proves critical for successful neobank functioning [Koibichuk et al. \(2021\)](#), while service innovation overcoming consumer resistance depends on emphasizing value over traditions [Laukkanen \(2016\)](#). Specifically among student cohorts, factors like economic benefits, security, and positive user experiences shape adoption and satisfaction with virtual banking [Lee and Jungwoo \(2020\)](#).

The digital transformation and its impact on market share indicate a significant influence on bank-specific factors, impacting the market share of traditional banks transitioning to neobanking models [Banerjee et al. \(2022\)](#). Moreover, the role of innovation in the fintech sector, particularly in

neobanking, is highlighted as a critical element for the sector's growth and customer satisfaction [Hrytsenko and Yatsenko \(2022\)](#).

Nonetheless, research remains limited in investigating differences across student demographics regarding neobank services. Moreover, the role of financial literacy in preferences and satisfaction stays underexplored, despite findings showing financial knowledge links to credit awareness [Disney and Gathergood \(2013\)](#) and market engagement [Krause and Battenfeld \(2019\)](#). Finally, few studies have analyzed German university populations amidst the country's aging trends shrinking traditional bank profitability [Berlemann et al. \(2010\)](#).

To address these gaps in understanding distinctions between student groups and the role of financial literacy in neobanking preferences, this paper examines differences in satisfaction levels based on nationality and financial knowledge. Using a dataset of Otto-von-Guericke-University Magdeburg university students in Germany including both German and international participants, I survey their experiences with neobank services. Self-reported measures assess satisfaction across multiple facets like fees, security, customer service, and digital features. Financial literacy indexes gauge students' pre-existing banking and investment expertise.

1.3. Research Questions

- **Question 1:** Are there differences in neobank satisfaction levels between German and international university students, accounting for financial literacy?
- **Question 2:** How does financial literacy influence the adoption and satisfaction of neobank services among university students?

1.4. Hypotheses

- **Hypothesis 1: Differences in Neobank Satisfaction Levels**
 - H_0 : There is no significant difference in neobank satisfaction levels between German and international university students when accounting for financial literacy.
 - H_1 : There is a significant difference in neobank satisfaction levels between German and international university students, even when accounting for financial literacy.
- **Hypothesis 2: Influence of Financial Literacy on Satisfaction**
 - H_0 : Financial literacy does not significantly influence the adoption and satisfaction of neobank services among university students.
 - H_1 : Financial literacy significantly influences the adoption and satisfaction of neobank services among university students.

2. Literature Review

The burgeoning interest in neobanks, digital-only financial institutions, has spurred considerable research into their adoption, user satisfaction, and the nuanced role of financial literacy in shaping banking preferences. This literature review delves into these themes, highlighting the multifaceted factors driving the appeal and utilization of neobanking services, and examines the demographic variables influencing the adoption and satisfaction rates among users.

2.1. Neobank Adoption Factors

Research into neobank adoption underscores a blend of technological, psychological, and socio-economic factors influencing consumers' decisions. Studies identify digital transformation and market share impact as pivotal, suggesting that neobanking significantly alters traditional banking paradigms by leveraging technology to enhance service delivery and customer engagement [Banerjee et al. \(2022\)](#). Innovations in technology and the management of cyber fraud risks are also critical for fostering neobank adoption [Koibichuk et al. \(2021\)](#), highlighting the balance between innovation and security.

2.2. User Satisfaction Determinants

User satisfaction with neobanks has been closely linked to the perceived value, innovation, and user experience. The determinants of customer satisfaction in retail banking, such as service quality and perceived value, play a crucial role in shaping user satisfaction in the context of neobanks [Arbore and Busacca \(2009\)](#); [Levesque and McDougall \(1996\)](#). Moreover, the asymmetric impact of attribute performances on customer satisfaction and dissatisfaction underlines the importance of managing negative experiences [Arbore and Busacca \(2009\)](#). The relationship between customer satisfaction, retention, and market share further emphasizes the strategic importance of these factors [Rust and Zahorik \(1993\)](#).

2.3. Impact of Financial Literacy on Banking Preferences

The role of financial literacy in shaping banking preferences and behaviors is increasingly recognized. Financial literacy influences consumer behavior and decision-making, with more literate individuals exhibiting more prudent financial behaviors during financial crises [Klapper et al. \(2013\)](#). Financial education significantly impacts savings behavior among low-income individuals, underscoring the potential of financial literacy programs [Calderone et al. \(2018\)](#).

2.4. Influence of Demographic Variables

Demographic variables significantly influence the adoption and satisfaction with banking services. Service quality, perceived value, and trust impact satisfaction and loyalty, with demographic characteristics moderating these relationships [Setiawan \(2016\)](#). Younger, tech-savvy populations are more inclined towards neobanking, driven by the allure of innovative features and convenience.

These studies collectively highlight the complex interplay between service quality, customer perceptions, financial literacy, and demographic factors in shaping the banking landscape. Understanding these dynamics is crucial for banks, especially neobanks, as they strive to tailor their offerings to meet diverse customer needs and preferences.

3. Data

The dataset for this study is derived from primary survey responses collected from 96 university students, focusing on their experiences with neobank services. A convenience sampling method was employed, utilizing student groups on WhatsApp and in-person recruitment following lectures. This approach enabled the collection of a diverse sample in terms of study levels, nationalities, and bank account ownership. Participation was voluntary, with no incentives offered. The majority of respondents were business and economics majors from the Otto-von-Guericke University in Germany. Detailed information about the questionnaire and the variables included in the analysis can be found in Appendix 21.

The collected data encompass key variables related to demographic characteristics, financial literacy, adoption of neobanking, and satisfaction levels. To present a comprehensive view, descriptive statistics for both quantitative and categorical variables are provided below.

Table 1. Descriptive statistics for selected variables.

Variable	Obs.	Mean	Std. Dev.	Range
Age	96	23.53	2.45	18–27
Financial Literacy	96	3.64	0.94	1–5
Satisfaction	69	3.54	1.09	2–5

The dataset reveals an average age of 23.5 years among respondents, with financial literacy and neobank satisfaction averaging 3.64 and 3.54 on a 5-point scale, respectively, indicating moderately high financial literacy and satisfaction levels.

Table 2 displays the frequency distribution of categorical variables, including gender, nationality, and banking behaviors, providing insights into the demographic profile and preferences of the surveyed students.

Table 2. Frequency distribution of categorical variables in survey responses.

Variable	Top Category	Frequency
Gender	Male	50
Nationality	German	34
Level of Study	Postgraduate	76
Have Bank Account	Yes	90
Use Neobank	Yes	69
Neobanks Used	Revolut	28
Purposes for Neobank	Transfers back home	18
Aware of Neobanks	Yes	69
Discovery Method	Friends	39
Reasons for Using	Easy to open an account	27
Reasons for Not Using	Lack of trust	15
Security Perception	Slightly less secure	30
Continue Using	Yes	49
Recommend Neobank	Yes	43
Valued Features	User interface	33
Switching Reasons	Better digital services	27
Cultural Influence on Banking	Yes	48
Cultural Expectations	Preference for in-person services	41

This diverse dataset, featuring respondents from six different countries and varied educational backgrounds, facilitates a detailed comparative analysis to address the research questions concerning the impact of nationality and financial literacy on neobank satisfaction levels.

4. Methodology

Statistical Analysis The primary objective of the statistical analysis was to identify the factors influencing neobank satisfaction levels among university students. To this end, two main statistical techniques were employed: Ordinary Least Squares (OLS) regression and Analysis of Covariance (ANCOVA).

4.1. OLS Regression Analysis

The model equation presented in the OLS (Ordinary Least Squares) Regression section represents the statistical relationship being studied between the dependent variable (neobank satisfaction) and a set of independent variables (financial literacy, nationality group, etc.). Here’s a breakdown of the components of the model equation:

$$\text{Satisfaction} = \beta_0 + \beta_1 \times \text{Financial_Literacy} + \beta_2 \times \text{Nationality_Group (International)} + \dots + \epsilon$$

This comprehensive model allowed for an evaluation of the direct effects of each predictor on satisfaction levels. Interaction terms were also considered to examine potential moderation effects, specifically whether the impact of financial literacy on satisfaction varied by the student’s nationality.

4.2. ANCOVA

ANCOVA was utilized to assess differences in neobank satisfaction levels between German and international students while controlling for financial literacy. This approach enabled the isolation of nationality’s effect on satisfaction from the influence of financial literacy.

5. Results

5.1. OLS Regression

Table presents complete ordinary least squares regression results predicting neobank satisfaction from financial literacy, international student status, gender, and age, based on the approach described by Wooldridge (2010) and Gujarati and Porter (2009).

Table 3. OLS Regression Results. Summary View of Tables A2 & A3.

	Coefficient	p-value
Intercept	2.4825	0.009
Financial Literacy	0.2190	0.069
International Student	1.0575	0.000
Gender	-0.0719	0.684
Age	-0.0177	0.632

The model explains 20% of the variance in satisfaction, with nationality (operationalized through international student status) and financial literacy representing statistically significant and marginally significant predictors, respectively, in line with findings from Lusardi and Mitchell (2014) and Huston (2010). International students report +1.06 higher satisfaction controlling for other factors, a finding that echoes the research by Khan et al. (2017) on the distinct preferences and higher satisfaction levels of international students with digital banking platforms. The positive coefficient for financial literacy suggests that higher knowledge associates with greater satisfaction, although the p-value is slightly above the conventional .05 threshold, indicating a trend similar to those reported by Fernandes et al. (2014). Gender and age show no systematic satisfaction differences, consistent with broader research indicating variable impacts of these demographic factors on financial satisfaction Gathergood (2012).

Overall, the findings demonstrate the relevance of demographic and skill factors in shaping neobanking perspectives among university students. Further analysis will test additional predictors and subgroup differences in alignment with study objectives, drawing upon the comprehensive modeling approaches suggested by Kennedy (2008).

5.2. ANCOVA

The Analysis of Covariance (ANCOVA) was employed to examine the impact of nationality on satisfaction levels with neobank services among university students, controlling for financial literacy, following methodologies outlined by Cohen et al. (2003) and Field (2013). The results of this analysis are presented in Table 4.

Table 4. ANCOVA Results on Satisfaction Levels by Nationality, Controlling for Financial Literacy.

Source of Variation	Sum of Squares	df	F-Value	p-Value
Nationality Group	13.148	1	18.130	<0.00005
Financial Literacy	2.351	1	3.242	0.075
Residual	67.444	93	-	-

The ANCOVA results indicate a statistically significant difference in satisfaction levels based on nationality ($p < 0.00005$), with the Nationality Group contributing a sum of squares of 13.148 and an F-value of 18.130, suggesting significant effects as discussed by Tabachnick and Fidell (2013). This finding underscores that international students report higher satisfaction with neobank services than their German counterparts, even when controlling for financial literacy. Such differences could stem from international students' greater appreciation for features like global accessibility and convenience that neobanks typically offer, attributes that are likely to resonate with their unique financial needs and cross-border transaction requirements Huang and Sarigöllü (2014).

While Financial Literacy, with a sum of squares of 2.351 and an F-value of 3.242, did not reach traditional levels of statistical significance ($p = 0.075$), the observed p-value suggests a trend towards a positive relationship between financial literacy and satisfaction, aligning with the findings by [Lusardi and Mitchell \(2014\)](#). This trend points to the potential of financial literacy as a factor that may influence satisfaction with neobank services, warranting further exploration. Enhancing financial literacy among university students could serve as a strategic approach to increase satisfaction with financial services, suggesting that educational interventions aimed at improving financial knowledge might also improve perceptions and experiences with neobanks [Venkatesh et al. \(2012\)](#).

6. Conclusions

This study investigated the disparities in satisfaction levels with neobank services among German and international university students, taking financial literacy into account. Our findings elucidate several critical insights:

1. **International vs. German Students:** International students exhibit significantly higher satisfaction levels with neobank services than their German counterparts, even after adjusting for financial literacy. This aligns with research showing that cultural factors influence predictors of life satisfaction and well-being across national contexts [Oishi et al. \(1999\)](#). The necessity for international financial transactions may additionally contribute to the increased satisfaction among international students.
2. **Financial Literacy's Influence:** Although financial literacy displayed a positive correlation with satisfaction, it did not achieve statistical significance. However, past studies have documented that personal financial wellness and capability relate to greater financial wellbeing [Gerrans et al. \(2014\)](#). Therefore, while the impact of financial literacy on neobank perceptions is not as substantial as hypothesized in this analysis, the trend hints at the potential of financial knowledge to shape user satisfaction.
3. **Demographic Factors:** The analysis showed that demographic variables, such as gender and age, do not have a significant impact on satisfaction with neobank services. This aligns with research underscoring that cultural orientations exert a greater influence than demographic characteristics alone in determining needs and values [Gelfand et al. \(2011\)](#).

In summary, the study underscores the importance of catering to diverse user groups in the context of neobank services, particularly between domestic and international student segments. Neobanks have the opportunity to enhance adoption and loyalty by focusing on inclusive offerings tailored to unique cultural needs, as a fintech bank that does it best for international students is Revolut. Looking at their offerings and the conclusion of our study we can clearly see that Easy of Opening accounts, low or no fees and the cheap International Transfers attract international students. Furthermore, financial education programs could serve as a strategy to boost satisfaction across user profiles. Future research should investigate additional factors driving neobank satisfaction while testing the efficacy of financial literacy initiatives among university students.

Appendix A

Appendix A.1. Tables & Graphs

Table A1. Descriptive statistics for survey variables.

Variable	Count	Unique	Top	Freq	Mean	Std. Dev.	Min	25%	50%	75%	Max
Age	96	-	-	-	23.53	2.45	18	22	24	25	27
Gender	96	3	Male	50	-	-	-	-	-	-	-
Nationality	96	7	German	34	-	-	-	-	-	-	-
Level of Study	96	2	Postgraduate	76	-	-	-	-	-	-	-
Have Bank Account	96	2	Yes	90	-	-	-	-	-	-	-
Use Neobank	96	2	Yes	69	-	-	-	-	-	-	-
Neobanks Used	69	4	Revolut	28	-	-	-	-	-	-	-
Purposes for Neobank	69	4	Transfers back home	18	-	-	-	-	-	-	-
Financial Literacy	96	-	-	-	3.64	0.94	1	3	4	4	5
Aware of Neobanks	96	2	Yes	69	-	-	-	-	-	-	-
Discovery Method	96	4	Friends	39	-	-	-	-	-	-	-
Reasons for Using	69	4	Easy to open an account	27	-	-	-	-	-	-	-
Reasons for Not Using	27	4	Lack of trust	15	-	-	-	-	-	-	-
Satisfaction	69	-	-	-	3.54	1.09	2	3	4	4	5
Security Perception	96	5	Slightly less secure	30	-	-	-	-	-	-	-
Continue Using	69	3	Yes	49	-	-	-	-	-	-	-
Recommend Neobank	69	3	Yes	43	-	-	-	-	-	-	-
Valued Features	96	5	User interface	33	-	-	-	-	-	-	-
Switching Reasons	69	4	Better digital services	27	-	-	-	-	-	-	-
Cultural Influence on Banking	96	2	Yes	48	-	-	-	-	-	-	-
Cultural Expectations	96	3	Preference for in-person services	41	-	-	-	-	-	-	-
Simplified Nationality	96	2	International	62	-	-	-	-	-	-	-

Table A2. OLS Regression Results Summary.

Statistic	Value
Dep. Variable	Satisfaction
R-squared	0.200
Adj. R-squared	0.164
F-statistic	5.566
Prob (F-statistic)	0.000480
Log-Likelihood	-114.71
No. Observations	94
AIC	239.4
BIC	252.1
Df Residuals	89
Df Model	4

Table A3. Coefficients of the OLS Regression Model.

Predictor	Coef.	Std. Err.	t	P> t
Intercept	2.4825	0.930	2.668	0.009
Q("Financial Literacy")	0.2190	0.119	1.837	0.069
International_Student	1.0575	0.233	4.545	<0.001
Gender_Num	-0.0719	0.176	-0.409	0.684
Age	-0.0177	0.037	-0.480	0.632

Table A4. ANCOVA Results on Neobank Satisfaction Levels.

Variable	Coefficient	Std. Error	t-value	p-value
Intercept	1.9688	0.737	2.672	0.010
Nationality Group (International)	1.5312	0.331	4.625	<0.001
Financial Literacy (2)	-1.242e-15	0.760	-1.63e-15	1.000
Financial Literacy (3)	0.4167	0.685	0.608	0.545
Financial Literacy (4)	0.3550	0.702	0.505	0.615
Financial Literacy (5)	1.4427	0.763	1.892	0.063

Note: $p < 0.05$ indicates statistical significance.

Appendix A.2. Survey Questions

Please complete the following questions to help us understand your banking preferences and financial behaviors. Your responses are invaluable to our study.

Appendix A.2.1. Demographic Information

1. What is your age? ____ [Open-ended]
2. What is your gender?
- Male
- Female
- Prefer not to say
- Other: ____
3. What is your nationality? ____ [Open-ended]
4. What is your level of education?
- Undergraduate
- Postgraduate
- Other: ____

Appendix A.2.2. Banking Behavior

5. Do you have a traditional bank account?
- Yes
- No
6. Do you use neobanking services? (Neobanks are digital banks without any physical branches, offering banking services primarily through mobile apps or websites.)
- Yes
- No
7. If yes, which neobank(s) do you use? (Select all that apply or specify under "Other.")
- Revolut
- Wise
- N26
- Bunq
- Other: ____
8. What are your primary purposes for using a neobank? (Select all that apply or specify under "Other.")
- Daily spendings
- Online purchases
- Transfers back home
- Paying bills
- Other: ____

9. How would you rate your financial literacy on a scale from 1 to 5? (*Financial literacy refers to the ability to understand and use various financial skills, including personal financial management, budgeting, and investing.*)

1 (Very Low)

2

3

4

5 (Very High)

10. Were you aware of neobanks before this survey?

Yes

No

11. How did you first learn about neobanks? (*Select all that apply*)

Friends

Google Search

Social Media

University Campus

Other: _____

Appendix A.2.3. Usage and Perceptions

12. What motivated you to use a neobank? (*Select all that apply*)

Easy to open an account

No/low fees

Better app

Recommendations

Other: _____

13. If you do not use a neobank, what are your reasons? (*Select all that apply*)

Lack of trust

Security concerns

No branch locations

Prefer traditional banking

Other: _____

14. How satisfied are you with your neobank's services on a scale from 1 to 5?

1 (Very Dissatisfied)

2

3

4

5 (Very Satisfied)

15. How do you perceive the security of neobanking compared to traditional banking?

Much more secure

Slightly more secure

About the same

Slightly less secure

Much less secure

16. Are you likely to continue using neobanking services in the future?

Yes

No

Unsure

17. Would you recommend neobanking services to others?

Yes

No

Unsure

Appendix A.2.4. Preferences and Influences

18. What features do you value most in neobanking services? (*Select all that apply*)

User interface
Customer support
International transactions
Budgeting tools
Security features
Other: _____

19. What would motivate you to switch to a neobank or change your current neobank? (*Select all that apply*)

Better digital services
Improved customer support
More physical branches
Security concerns
Other: _____

20. Does your cultural background influence your banking preferences?

Yes
No

21. How do cultural expectations affect your perception of banking services? (*Select all that apply*)

Preference for in-person services
High security expectations
High expectations for digital services
Other: _____

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