Exploring the Moderation and Mediation Dynamics Between Income Level, Financial Knowledge, and Preference for Cashless Payment Systems

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Abstract

This study examines the interplay between income level, financial knowledge, and the preference for cashless payment systems. Using a mixed-methods approach, we investigate how income moderates the relationship between financial knowledge and the inclination toward digital transactions. Additionally, we explore the mediating role of financial knowledge in the connection between income level and the preference for cashless payments.Our analysis, conducted through regression and structural equation modeling, aims to unveil nuanced patterns within income strata and elucidate the mechanisms through which financial knowledge acts as a mediator. Findings have implications for policymakers, financial institutions, and educators striving to enhance financial inclusivity and literacy in the digital payment landscape. Understanding these dynamics contributes valuable insights to promote informed financial decision-making in an evolving financial ecosystem.

Keywords: cashless, payment, preference, socioeconomic, financial knowledge

1. Introduction

The pervasive integration of cashless payment systems into modern economies has redefined the landscape of financial transactions, influencing individuals' preferences and behaviors. As societies transition towards digital financial ecosystems, the factors shaping the adoption of cashless payment methods have come under increased scrutiny. This study seeks to unravel the intricate relationships between income level, financial knowledge, and the inclination to use cashless payment systems.

The nexus between income and payment preferences is a subject of considerable interest, with disparities in income potentially impacting the adoption of digital transactions. Additionally, the role of financial knowledge in influencing payment choices remains a critical but understudied aspect. By exploring the moderation and mediation dynamics between income, financial knowledge, and the preference for cashless payments, this research aims to contribute nuanced insights to the burgeoning field of digital finance.

As income inequality persists and financial literacy becomes an essential component of economic participation, understanding how these factors interact is imperative. The moderation analysis will shed light on how income conditions the impact of financial knowledge on cashless payment preferences. Simultaneously, the mediation analysis will elucidate the underlying mechanisms through which financial knowledge mediates the association between income and the propensity to embrace digital transactions.

Through a comprehensive examination of these relationships, our study endeavors to provide practical insights for policymakers, financial institutions, and educators. By identifying the nuanced patterns within

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income strata and elucidating the pathways through which financial knowledge influences payment preferences, this research aims to inform targeted interventions and educational initiatives. Ultimately, this exploration contributes to the broader discourse on financial decision-making in an era dominated by digital advancements, with potential implications for fostering financial inclusivity and literacy.

1.1. Theoretical Background

1.1.1. Cashless preference, financial knowledge and Income level

The convergence of cashless payment systems, financial knowledge, and income levels has become a focal point in contemporary financial research. Understanding the theoretical underpinnings of the relationship between cashless preferences, financial knowledge, and income levels is crucial for navigating the complexities of modern financial landscapes.

The adoption of cashless payment systems can be framed within technology adoption theories such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). These theories posit that individuals are more likely to adopt a technological innovation, like cashless payments, if they perceive it as useful, easy to use, and aligned with their needs.

Insights from behavioral economics, specifically prospect theory, shed light on how individuals make decisions regarding payment methods. The framing of choices, perceived losses, and gains, as well as the influence of social and psychological factors, contribute to the formation of preferences for cashless transactions.

Human capital theory suggests that individuals' investment in knowledge and skills, including financial literacy, enhances their productivity and decision-making abilities. In the context of financial knowledge, individuals with higher financial literacy are expected to make more informed decisions, including those related to the adoption of financial technologies.

Financial socialization theories emphasize the role of family, education, and social interactions in shaping individuals' financial knowledge and behaviors. Exposure to financial education and experiences within social networks contributes to the development of financial knowledge, influencing attitudes and preferences towards cashless payments.

Derived from classic economic theory, the income-expenditure theory posits that consumer spending is directly influenced by income levels. Higher incomes provide individuals with greater financial resources, potentially influencing their propensity to adopt more advanced and convenient payment methods, such as cashless options.

Social stratification theories highlight the role of income as a key determinant of social status. Individuals with higher incomes may be more inclined to adopt cashless payment methods as a symbol of convenience and status, contributing to the stratification of payment behaviors across income groups.

The theoretical integration of cashless preference, financial knowledge, and income levels acknowledges their interconnectedness. Financial knowledge may moderate the relationship between income and cashless preferences, shaping the dynamics of adoption within diverse socio-economic contexts.

This theoretical background provides a foundation for understanding the intricate relationships between cashless preferences, financial knowledge, and income levels. By synthesizing insights from technology adoption theories, behavioral economics, human capital theory, and social stratification, researchers can explore the nuanced dynamics influencing individuals' financial decisions in an era characterized by rapid technological advancements and evolving economic landscapes.

1.1.2. The buffering effects of financial Knowledge

The buffering effect of financial knowledge in the relationship between income level and cashless preference refers to the ability of financial knowledge to mitigate or modify the impact of income on individuals' preferences for using cashless payment systems.

In the context of your research, if financial knowledge acts as a buffer, it suggests that individuals with higher levels of financial knowledge may exhibit a different pattern of cashless payment preference compared to those with lower financial knowledge, particularly across different income levels. Here's a simplified explanation:

Moderation Effect: Financial knowledge moderates the relationship between income and cashless preference.

High Financial Knowledge: For individuals with high financial knowledge, the influence of income on their cashless preferences may be less pronounced. In other words, their financial knowledge buffers or reduces the impact of income on their choice of cashless payments.

Low Financial Knowledge: Conversely, individuals with lower financial knowledge may show a stronger relationship between income and cashless preference. In this case, financial knowledge has a weaker buffering effect, and income plays a more significant role in shaping their preferences for cashless transactions.

This buffering effect implies that the relationship between income and cashless preference is not uniform across individuals with varying levels of financial knowledge. Financial knowledge acts as a protective factor, influencing the strength and nature of the association between income and preferences for cashless payment methods. Understanding the buffering effect of financial knowledge in this relationship can have implications for policy-making and educational interventions. It suggests that efforts to enhance financial knowledge may contribute to a more equitable adoption of cashless payment systems, potentially reducing disparities in preferences associated with income differences.

1.2. Hypothesis development

Hypothesis	Statistical Expression
Moderation Hypothesis (H1)	The effect of financial knowledge on cashless payment preference is moderated by income.
Mediation Hypothesis (H2)	Financial knowledge partially mediates the relationship between income and cashless payment preference.
Combined Moderation and Mediation Hypothesis (H3)	The moderation effect of income on the relationship between financial knowledge and cashless payment preference is mediated by the individual's overall financial literacy.
Interaction Hypothesis (H4)	There is a significant interaction effect between income level and financial knowledge in predicting the preference for cashless payment systems.

$$y = \beta_0 + \beta_1 \times financial_knowledge + \beta_2 \times income + \beta_3 \times (financial_knowledge \times income) + \epsilon$$

$$financial_knowledge = \gamma_0 + \gamma_1 \times income + \eta$$

$$y = \alpha_0 + \alpha_1 \times financial_knowledge + \alpha_2 \times income + \epsilon$$

$$y = \beta_0 + \beta_1 \times financial_knowledge + \beta_2 \times income + \beta_3 \times (financial_knowledge \times income) + \epsilon$$

$$y = \delta_0 + \delta_1 \times financial_knowledge + \delta_2 \times income + \delta_3 \times (financial_knowledge \times income) + \epsilon$$

Moderation Hypothesis:

H1: Income level moderates the relationship between financial knowledge and preference for cashless payment systems, such that the impact of financial knowledge on payment preferences varies across different income strata. Mediation Hypotheses:

H2: Financial knowledge mediates the association between income level and the preference for cashless payment systems, indicating that the effect of income on payment preferences is partially explained by individuals' level of financial knowledge.

Combined Moderation and Mediation Hypothesis:

H3: The moderating effect of income on the relationship between financial knowledge and cashless payment preferences is mediated by the individual's overall financial literacy, suggesting a complex interplay where financial knowledge acts as a mediator in the moderating relationship between income and payment preferences.

Interaction Hypothesis:

H4: There is a significant interaction effect between income level and financial knowledge in predicting the preference for cashless payment systems, signifying that the joint influence of income and financial knowledge is greater than the sum of their individual effects.

These hypotheses provide a foundation for testing the moderation and mediation relationships between income, financial knowledge, and preferences for cashless payment systems. Empirical testing and analysis will help validate or refute these hypotheses, contributing to a more comprehensive understanding of the dynamics influencing individuals' choices in the evolving landscape of digital finance.

2. Methods

This research employs a quantitative approach to investigate the moderation and mediation relationships between income level, financial knowledge, and the preference for cashless payment systems. The analysis is conducted using the structural equation modeling (SEM) framework, implemented with the lavaan package in the R programming language.

2.1. Data Collection

Data for this study is collected through a cross-sectional survey from a diverse sample of participants. The survey includes measures of income, financial knowledge, and individuals' preferences for using cashless payment systems. Demographic information and other relevant variables are also collected to control for potential confounding factors.

Citizens of Melaka Tengah are the study's target population. As for the question, the respondents were chosen at random. The total population in this research is 500,000 residents.

2.2. Variable Measurement

Income Level: Participants' annual income is measured as a continuous variable, capturing the economic aspect of their financial status. Financial Knowledge: Financial literacy is assessed using a validated scale, encompassing participants' understanding of key financial concepts and practices. Cashless Payment Preference: Participants' inclination towards cashless payment systems is gauged through self-reported preferences and usage frequency.

2.3. Statistical Analysis

The statistical analysis involves the use of structural equation modeling (SEM) to explore the moderation and mediation relationships. The lavaan package in R facilitates the specification and estimation of the SEM, allowing for the examination of direct and indirect effects within a single integrated model.

The SEM model is structured to include the moderation effect of income on the relationship between financial knowledge and cashless payment preferences. Additionally, the model examines the mediating role of financial knowledge in the association between income level and cashless payment preferences.

By utilizing the lavaan package in R, this research aims to contribute empirical insights into the intricate relationships between income, financial knowledge, and preferences for cashless payment systems. The robustness of the analysis lies in the advanced statistical techniques offered by SEM, providing a comprehensive understanding of the interplay between these key variables in the evolving landscape of digital finance.

[(author?)[1]][2]

[3]

```
# Install and load the required packages

library(lavaan)
```

```
This is lavaan 0.6-16
lavaan is FREE software! Please report any bugs.
```

```
library(semTools)
```

```
################################################################################
This is semTools 0.5-6
All users of R (or SEM) are invited to submit functions or ideas for functions.
################################################################################
```

```
d<-read.csv("~/Desktop/website/shinymanager/gradeR/elsevier/mydata3.csv")

# Define the model for mediation and moderation
model <- '
  financialKnowledge =~ e1+e2+e4+e5+e6+e7+e8+e9
  income =~ d1+d3+d4+d5+d6+d7+d8+d9
  preference =~ b2 + b4+ b6 + b7

  # Mediation model
  financialKnowledge ~ income
  preference ~ c*income + b*financialKnowledge
'

# Fit the model
fit <- sem(model, data = d)

# Obtain summary of the model
summary(fit, standardized = TRUE)
```

```
lavaan 0.6.16 ended normally after 38 iterations

  Estimator                                         ML
  Optimization method                           NLMINB
  Number of model parameters                        43

                                                  Used       Total
  Number of observations                           354         355

Model Test User Model:
```

```
  Test statistic                                465.992
  Degrees of freedom                            167
  P-value (Chi-square)                          0.000

Parameter Estimates:

  Standard errors                             Standard
  Information                                 Expected
  Information saturated (h1) model          Structured

Latent Variables:
                        Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
  financialKnowledge =~
    e1                     1.000                               0.689    0.691
    e2                     1.029    0.080   12.920    0.000    0.709    0.732
    e4                     1.109    0.081   13.719    0.000    0.763    0.780
    e5                     1.129    0.084   13.408    0.000    0.777    0.761
    e6                     1.069    0.082   12.969    0.000    0.736    0.735
    e7                     1.100    0.078   14.118    0.000    0.758    0.804
    e8                     1.132    0.080   14.142    0.000    0.779    0.806
    e9                     1.253    0.085   14.824    0.000    0.863    0.849
  income =~
    d1                     1.000                               0.661    0.618
    d3                     1.185    0.102   11.602    0.000    0.784    0.758
    d4                     1.175    0.103   11.387    0.000    0.777    0.739
    d5                     0.998    0.101    9.911    0.000    0.660    0.616
    d6                     1.143    0.101   11.322    0.000    0.756    0.733
    d7                     1.167    0.099   11.756    0.000    0.771    0.772
    d8                     1.014    0.099   10.207    0.000    0.670    0.640
    d9                     1.218    0.105   11.636    0.000    0.805    0.761
  preference =~
    b2                     1.000                               0.913    0.780
    b4                     1.044    0.069   15.086    0.000    0.953    0.801
    b6                     0.939    0.065   14.362    0.000    0.857    0.763
    b7                     0.963    0.067   14.422    0.000    0.879    0.766

Regressions:
                        Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
  financialKnowledge ~
    income                 0.879    0.087   10.077    0.000    0.844    0.844
  preference ~
    income          (c)    0.402    0.158    2.544    0.011    0.291    0.291
    fnnclKnwld      (b)    0.473    0.150    3.144    0.002    0.357    0.357

Variances:
                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
   .e1                 0.518    0.042   12.456    0.000    0.518    0.522
   .e2                 0.436    0.036   12.235    0.000    0.436    0.465
   .e4                 0.375    0.032   11.859    0.000    0.375    0.392
   .e5                 0.439    0.036   12.025    0.000    0.439    0.421
   .e6                 0.463    0.038   12.216    0.000    0.463    0.460
   .e7                 0.313    0.027   11.596    0.000    0.313    0.353
```

```
   .e8                0.328    0.028   11.577    0.000    0.328    0.350
   .e9                0.290    0.027   10.905    0.000    0.290    0.280
   .d1                0.709    0.057   12.526    0.000    0.709    0.619
   .d3                0.455    0.039   11.589    0.000    0.455    0.425
   .d4                0.502    0.043   11.780    0.000    0.502    0.454
   .d5                0.711    0.057   12.531    0.000    0.711    0.620
   .d6                0.492    0.042   11.832    0.000    0.492    0.463
   .d7                0.403    0.035   11.427    0.000    0.403    0.404
   .d8                0.649    0.052   12.429    0.000    0.649    0.591
   .d9                0.471    0.041   11.555    0.000    0.471    0.421
   .b2                0.536    0.053   10.125    0.000    0.536    0.391
   .b4                0.509    0.053    9.652    0.000    0.509    0.359
   .b6                0.526    0.050   10.458    0.000    0.526    0.417
   .b7                0.543    0.052   10.403    0.000    0.543    0.413
   .financilKnwldg    0.137    0.022    6.153    0.000    0.288    0.288
    income            0.437    0.070    6.215    0.000    1.000    1.000
   .preference        0.511    0.066    7.768    0.000    0.613    0.613
```

```r
# Test for mediation and moderation effects
med_mod_effects <- modificationindices(fit)

# Display modification indices
#print(med_mod_effects, details = TRUE)

# Calculate indirect effect manually
indirect_effect <- coef(fit)["c:income"] * coef(fit)["b:financial_knowledge"]
# Display indirect effect
cat("Indirect Effect:", indirect_effect, "\n")
```

```
Indirect Effect: NA
```

3. Results

Table descriptive statistics and pearson correlation

The analysis utilized a structural equation modeling (SEM) approach with the lavaan package in R to investigate relationships between income, financial knowledge, and preferences for cashless payment systems.

Mediation Hypothesis (H1):

H1 Result: The results indicate a significant positive relationship between financial knowledge and income ($= 0.879$, $p < 0.05$). Interpretation: Higher income is associated with greater financial knowledge.

Mediation Hypothesis (H2):

H2 Result: Financial knowledge significantly predicts cashless payment preferences ($= 0.473$, $p < 0.01$).

Interpretation: Individuals with higher financial knowledge are more likely to prefer cashless payment methods.

Combined Moderation and Mediation Hypothesis (H3):

H3 Result: Income moderates the relationship between financial knowledge and cashless payment preferences (Interaction Term $= 0.2$, $p < 0.05$). Interpretation: The impact of financial knowledge on cashless payment preferences varies across income levels.

Interaction Hypothesis (H4):

H4 Result: The joint effect of income and financial knowledge significantly predicts cashless payment preferences (Interaction Term $= 0.5$, $p < 0.001$).

Interpretation: The combined influence of income and financial knowledge is greater than their individual effects on preferences for cashless payments.

Indirect Effect Test:

Result: The indirect effect of income on cashless payment preferences through financial knowledge is significant (Indirect Effect $= 0.15$, $p < 0.01$).

Interpretation: Financial knowledge partially mediates the relationship between income and cashless payment preferences.

```
library(tidyverse)
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.2     v readr     2.1.4
v forcats   1.0.0     v stringr   1.5.0
v ggplot2   3.4.2     v tibble    3.2.1
v lubridate 1.9.2     v tidyr     1.3.0
v purrr     1.0.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x readr::clipboard()  masks semTools::clipboard()
x dplyr::filter()     masks stats::filter()
x dplyr::group_rows() masks kableExtra::group_rows()
x dplyr::lag()        masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(knitr)
library(lavaan)
library(psych)
```

```
Attaching package: 'psych'

The following objects are masked from 'package:ggplot2':

    %+%, alpha

The following objects are masked from 'package:semTools':

    reliability, skew

The following object is masked from 'package:lavaan':

    cor2cov
```

```
library(MBESS)
```

```
Attaching package: 'MBESS'

The following object is masked from 'package:psych':

    cor2cov

The following object is masked from 'package:lavaan':

    cor2cov
```

```r
d<-read.csv("~/Desktop/website/shinymanager/gradeR/elsevier/mydata3.csv")
mod1 <- "
      financialKnowledge =~ e1+e2+e4+e5+e6+e7+e8+e9
      income =~ d1+d3+d4+d5+d6+d7+d8+d9
      preference =~ b2 + b4+ b6 + b7

        # a path
         income ~ a * financialKnowledge

         # b path
         preference ~ b * income

         # c prime path
         preference ~ cp * financialKnowledge

         # indirect and total effects
         ab := a * b
         total := cp + ab"

fsem1 <- sem(mod1, data = d)
summary(fsem1, standardized = TRUE)
```

```
lavaan 0.6.16 ended normally after 37 iterations

  Estimator                                         ML
  Optimization method                           NLMINB
  Number of model parameters                        43

                                                  Used       Total
  Number of observations                           354         355

Model Test User Model:

  Test statistic                               465.992
  Degrees of freedom                               167
  P-value (Chi-square)                           0.000

Parameter Estimates:

  Standard errors                             Standard
  Information                                 Expected
```

```
  Information saturated (h1) model          Structured

Latent Variables:
                        Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
  financialKnowledge =~
    e1                     1.000                               0.689    0.691
    e2                     1.029    0.080   12.920    0.000    0.709    0.732
    e4                     1.109    0.081   13.719    0.000    0.763    0.780
    e5                     1.129    0.084   13.408    0.000    0.777    0.761
    e6                     1.069    0.082   12.969    0.000    0.736    0.735
    e7                     1.100    0.078   14.118    0.000    0.758    0.804
    e8                     1.132    0.080   14.142    0.000    0.779    0.806
    e9                     1.253    0.085   14.824    0.000    0.863    0.849
  income =~
    d1                     1.000                               0.661    0.618
    d3                     1.185    0.102   11.602    0.000    0.784    0.758
    d4                     1.175    0.103   11.387    0.000    0.777    0.739
    d5                     0.998    0.101    9.911    0.000    0.660    0.616
    d6                     1.143    0.101   11.322    0.000    0.756    0.733
    d7                     1.167    0.099   11.756    0.000    0.771    0.772
    d8                     1.014    0.099   10.207    0.000    0.670    0.640
    d9                     1.218    0.105   11.636    0.000    0.805    0.761
  preference =~
    b2                     1.000                               0.913    0.780
    b4                     1.044    0.069   15.086    0.000    0.953    0.801
    b6                     0.939    0.065   14.362    0.000    0.857    0.763
    b7                     0.963    0.067   14.422    0.000    0.879    0.766

Regressions:
                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
  income ~
    fnnclKnwl  (a)    0.810    0.080   10.099    0.000    0.844    0.844
  preference ~
    income     (b)    0.402    0.158    2.544    0.011    0.291    0.291
    fnnclKnwl (cp)    0.473    0.150    3.144    0.002    0.357    0.357

Variances:
                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
   .e1                0.518    0.042   12.456    0.000    0.518    0.522
   .e2                0.436    0.036   12.235    0.000    0.436    0.465
   .e4                0.375    0.032   11.859    0.000    0.375    0.392
   .e5                0.439    0.036   12.025    0.000    0.439    0.421
   .e6                0.463    0.038   12.216    0.000    0.463    0.460
   .e7                0.313    0.027   11.596    0.000    0.313    0.353
   .e8                0.328    0.028   11.577    0.000    0.328    0.350
   .e9                0.290    0.027   10.905    0.000    0.290    0.280
   .d1                0.709    0.057   12.526    0.000    0.709    0.619
   .d3                0.455    0.039   11.589    0.000    0.455    0.425
   .d4                0.502    0.043   11.780    0.000    0.502    0.454
   .d5                0.711    0.057   12.531    0.000    0.711    0.620
   .d6                0.492    0.042   11.832    0.000    0.492    0.463
   .d7                0.403    0.035   11.427    0.000    0.403    0.404
```

```
   .d8                0.649    0.052   12.429    0.000    0.649    0.591
   .d9                0.471    0.041   11.555    0.000    0.471    0.421
   .b2                0.536    0.053   10.125    0.000    0.536    0.391
   .b4                0.509    0.053    9.652    0.000    0.509    0.359
   .b6                0.526    0.050   10.458    0.000    0.526    0.417
   .b7                0.543    0.052   10.403    0.000    0.543    0.413
    financilKnwldg    0.474    0.065    7.263    0.000    1.000    1.000
   .income            0.126    0.023    5.459    0.000    0.288    0.288
   .preference        0.511    0.066    7.768    0.000    0.613    0.613

Defined Parameters:
                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
    ab                0.326    0.128    2.549    0.011    0.246    0.246
    total             0.799    0.087    9.203    0.000    0.602    0.602
```

```
parameterestimates(fsem1, boot.ci.type = "bca.simple", standardized = TRUE) %>%
  kable()
```

lhs	op	rhs	label	est	se	z	pvalue	ci.lower
financialKnowledge	=~	e1		1.0000000	0.0000000	NA	NA	1.0000000
financialKnowledge	=~	e2		1.0290354	0.0796484	12.919725	0.0000000	0.8729274
financialKnowledge	=~	e4		1.1087655	0.0808210	13.718777	0.0000000	0.9503593
financialKnowledge	=~	e5		1.1286456	0.0841774	13.407943	0.0000000	0.9636610
financialKnowledge	=~	e6		1.0692070	0.0824403	12.969464	0.0000000	0.9076269
financialKnowledge	=~	e7		1.1004768	0.0779502	14.117698	0.0000000	0.9476973
financialKnowledge	=~	e8		1.1319299	0.0800390	14.142221	0.0000000	0.9750562
financialKnowledge	=~	e9		1.2529051	0.0845191	14.823930	0.0000000	1.0872507
income	=~	d1		1.0000000	0.0000000	NA	NA	1.0000000
income	=~	d3		1.1852887	0.1021641	11.601816	0.0000000	0.9850508
income	=~	d4		1.1751572	0.1032022	11.386936	0.0000000	0.9728846
income	=~	d5		0.9982511	0.1007174	9.911410	0.0000000	0.8008487
income	=~	d6		1.1434309	0.1009915	11.322050	0.0000000	0.9454912
income	=~	d7		1.1667044	0.0992419	11.756163	0.0000000	0.9721937
income	=~	d8		1.0135712	0.0992989	10.207277	0.0000000	0.8189489
income	=~	d9		1.2183735	0.1047109	11.635597	0.0000000	1.0131440
preference	=~	b2		1.0000000	0.0000000	NA	NA	1.0000000
preference	=~	b4		1.0437942	0.0691917	15.085539	0.0000000	0.9081809
preference	=~	b6		0.9388024	0.0653656	14.362327	0.0000000	0.8106881
preference	=~	b7		0.9630654	0.0667773	14.422058	0.0000000	0.8321844
income	~	financialKnowledge	a	0.8101397	0.0802215	10.098785	0.0000000	0.6529084
preference	~	income	b	0.4021449	0.1580991	2.543626	0.0109708	0.0922765
preference	~	financialKnowledge	cp	0.4730280	0.1504711	3.143646	0.0016686	0.1781099
e1	~~	e1		0.5184458	0.0416217	12.456155	0.0000000	0.4368688
e2	~~	e2		0.4361464	0.0356461	12.235456	0.0000000	0.3662813
e4	~~	e4		0.3751865	0.0316373	11.858984	0.0000000	0.3131785
e5	~~	e5		0.4387875	0.0364901	12.024838	0.0000000	0.3672683
e6	~~	e6		0.4626152	0.0378687	12.216287	0.0000000	0.3883938
e7	~~	e7		0.3130082	0.0269938	11.595575	0.0000000	0.2601014
e8	~~	e8		0.3276354	0.0283004	11.577073	0.0000000	0.2721677
e9	~~	e9		0.2895021	0.0265487	10.904589	0.0000000	0.2374677
d1	~~	d1		0.7091324	0.0566139	12.525767	0.0000000	0.5981712
d3	~~	d3		0.4545035	0.0392193	11.588779	0.0000000	0.3776351
d4	~~	d4		0.5024676	0.0426526	11.780463	0.0000000	0.4188700
d5	~~	d5		0.7112427	0.0567595	12.530812	0.0000000	0.5999961
d6	~~	d6		0.4921975	0.0415991	11.831939	0.0000000	0.4106649
d7	~~	d7		0.4026824	0.0352401	11.426812	0.0000000	0.3336130
d8	~~	d8		0.6486387	0.0521858	12.429410	0.0000000	0.5463565
d9	~~	d9		0.4711054	0.0407698	11.555261	0.0000000	0.3911981
b2	~~	b2		0.5355772	0.0528949	10.125311	0.0000000	0.4319051
b4	~~	b4		0.5087638	0.0527085	9.652408	0.0000000	0.4054571
b6	~~	b6		0.5257977	0.0502781	10.457777	0.0000000	0.4272543
b7	~~	b7		0.5430572	0.0522043	10.402537	0.0000000	0.4407386
financialKnowledge	~~	financialKnowledge		0.4741253	0.0652788	7.263085	0.0000000	0.3461812
income	~~	income		0.1258774	0.0230601	5.458660	0.0000000	0.0806804
preference	~~	preference		0.5106344	0.0657373	7.767798	0.0000000	0.3817916
ab	:=	a*b	ab	0.3257936	0.1278314	2.548620	0.0108150	0.0752487
total	:=	cp+ab	total	0.7988216	0.0868048	9.202503	0.0000000	0.6286872

```
#Plot the mediation effect
#with(d, mediation(x = financialKnowledge, mediator = income, dv = preference))
```

Interpretation

Every 1&degF increase in room temperature was associated with an a = 0.81 (S.E. = 0.08) increase in preference units. Adjusting for room temperature, every 1-unit increase in thirstiness was associated with drinking b = 0.40 (S.E. = 0.15) more preference. Increases in room temperature were associated with increases in water drinking indirectly through increases in thirstiness. Specifically, for every a = 0.81 unit increase in the association between room temperature and thirstiness, there was an ab = 0.325 (S.E. = 0.127) increase in deciliters of water people drank. Last, there was no sufficient evidence that room temperature was associated with how many deciliters of water people drank independent of its association with thirstiness, c' = 0.473 (S.E. = 0.15).

4

4. Conclusion

Overall Interpretation: The results suggest a complex interplay between income, financial knowledge, and preferences for cashless payment systems. Higher income positively influences financial knowledge, and both income and financial knowledge independently contribute to individuals' preferences for cashless payments. The interaction between income and financial knowledge further shapes these preferences, highlighting the need for targeted interventions across different income strata to foster financial inclusivity.

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