Preferences of Public Transport Passengers Towards Contactless Card Payments – The Case of Greece

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Introduction

- The use of contactless payments has emerged as one of the most modern and convenient transaction methods for services and goods worldwide
- Public transportation systems should adapt to societal advancements
- Integrating contactless payments using smart cards into public transport makes these systems a more attractive option for daily commuting
- Widely used in Europe (e.g., London's Oyster, Paris's Navigo), contactless systems enhance urban mobility and efficiency





Objectives

- Evaluate Greek public transport passengers' preferences regarding contactless payments via bank card
- Identify the factors influencing their acceptance of this payment method
- Examine the main reasons that lead passengers to either prefer or avoid using contactless payment systems, as well as the role of demographic characteristics



Methodological Approach

- Acceptance and preference survey among public transport passengers
- > One online survey was conducted on:
 - 452 participants in Athens (n=340) and Thessaloniki (n=112)

VALID

Valid period

60 min

amco

- Questionnaire Structure:
 - Demographic information
 - Frequency and reasons for using public transport
 - Current ticket purchasing methods & potential challenges
 - Attitude toward technological developments
 - Available payment methods



Sample Statistics





Descriptive Statistics

- 8 out of 10 transport passengers express willingness to adopt contactless payments on public transport once available
- 7 out of 10 state they would use public transport more often if such a service were offered

Benefits of the solution:

- 29% Time saving
- 23% Convenience
- 21% Cashless ticket purchase
- 35% of transport passengers express concerns regarding payment security, while 26% are worried about data protection

What makes it difficult for you when buying a ticket for your public transport travel?





Modelling Approach

Selection of logistic regression models

- Binary model: likelihood of adopting the new payment system for public transportation
- Multinomial model: likelihood of individuals increasing/decreasing or not altering their use of public transportation
- Probability of choosing each alternative: $P_i = \frac{e^{U_i}}{1 + e^{U_i}}$





Results – Logistic Models (1/2)

Binary logistic regression model

Variables	Coefficients	P-Value	Odds Ratio
Intercept	-0.707	0.065	-
Age [45-54]	1.003	0.033	2.73
Marital Status [married/cohabiting with a partner]	0.522	0.048	1.69
Difficulty in purchasing tickets due to lack of bank cards	-0.581	0.033	0.56
Interest in information about bank card payment systems	1.496	<0.01	4.46
Need for information from the bank about new payment methods	-0.801	<0.01	0.45
Ability to purchase tickets without cash	0.824	<0.01	2.28
Positive attitude towards technological innovations	1.333	<0.01	3.79



Dependent Variable: Intention to change public transport usage if ticket purchasing were easier



Results – Logistic Models (2/2)

Multinomial logistic model

Variables	Coefficients	P-Value	Odds Ratio	Coefficients	P-Value	Odds Ratio
	"I would use PT more" option			"I would use PT less" option		
Intercept 1	-0.381	0.308	-			
Intercept 2	-	-	-	-0.561	0.362	-
Marital Status [married/cohabiting with a partner]	0.488	0.037	1.63	-0.939	0.026	0.391
Difficulty in purchasing tickets due to payment barriers	0.471	0.045	1.6	-	-	-
Interest in information about bank card payment systems	1.568	<0.01	-	-	-	-
Speed/convenience in ticket purchases	-	-	-	-1.291	<0.01	0.275
Cashless ticket purchase preference	-	-	-	-0.852	0.049	0.427
Negative attitude toward technological innovations	-0.873	<0.01	0.42	-	-	-

Environment: R-Studio

Dependent Variable: Willingness to adopt a contactless fare payment system



Conclusions (1/2)

- Information boosts adoption: Users informed about the new system are more likely to adopt it, as information builds trust and helps them recognize its benefits
- Attitude toward technology matters: Tech-friendly users are more open to adopting contactless payment, while tech-resistant individuals prefer the current system
- Middle-aged advantage: People aged 45–54 are 2.73 times more likely to use bank cards for public transport, likely due to financial independence and card familiarity
- Marital status influence: Married individuals or those living with a partner show higher acceptance, supported by mutual trust and influence within

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couples



Conclusions (2/2)

- Workplace size effect: Employees in medium-to-large companies are more inclined to use public transport, valuing speed and convenience, like paying by card
- Bank trust is key: Users seeking payment info from their bank are more cautious and less likely to adopt the system, due to security concerns
- Cashless preference drives adoption: Those preferring cashless ticketing favor card payments, appreciating the practicality and independence from physical sales points
- Familiarity as resistance: Some users resist change due to satisfaction with the current system, while others value the flexibility and reduced need for advance planning offered by contactless options





Policy & Planning Implications

- Strategic communication campaigns are essential to raise awareness and build trust in contactless systems
- Collaboration with banks can reassure users about data security and fraud prevention
- Tailored outreach to hesitant groups (e.g., older adults, low-tech users) may address concerns and foster equity
- Contactless systems should complement, not replace, traditional payment methods during transition periods





Scientific & Social Impact

- Enhancement of the overall user experience by offering fast, safe, convenient payment options
- Increased acceptance of tech innovations among public transport users
- Contribution to making public transport more attractive, thereby boosting its appeal and ridership potential
- Production of aggregated data to inform transport planning and improve service optimization
- Support of the broader goals of digital transformation and sustainability in urban mobility

Future Challenges

- Need for broader demographic and geographic data to generalize findings across Greece and other countries
- Addressing digital literacy gaps and building trust in data security and financial technologies
- Integration of contactless systems with emerging technologies like biometrics and mobile apps
- Balancing innovation with accessibility to avoid excluding passengers unfamiliar with or resistant to digital tools





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