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Research on purchasing behavior of foreign city users: the Czech Republic experience

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Abstract

The global expansion of e-commerce has transformed consumer shopping patterns, blurring the lines between physical and online retail. With the influx of foreign residents in cities worldwide, understanding the purchasing behavior of foreign city users has become crucial. This research aimed to discern differences in online and in-store purchasing between these foreign city users and local residents. Through multinomial logistic regression, the study revealed three significant predictors for online purchasing: gender, foreign city user status, and age. Females were 42.6% less likely to purchase online compared to males. Foreign users, without an official foreign status, were also less inclined to make online purchases. Meanwhile, the 18-29-age group showed the highest online purchasing propensity. The study also highlighted the need for businesses to adapt their strategies by focusing on cultural sensitivity, language support, and optimizing last-mile logistics. Insights, understanding these dynamics, could be vital for (physical and online) retailers which need to adapt to the changing urban consumer landscape.

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1. Introduction

The worldwide proliferation of e-commerce has revolutionized the way consumers shop, blurring the boundaries between physical and online retail channels. In recent years, cities are developing, attracting people from foreign countries (e.g., those coming for work or study), who nowadays make up a significant part of the city's population. Due to the outnumber of forced migrants and temporarily protected citizens, the urban supply of goods to the cities has become a crucial issue for policymakers and a challenge for the industry to cope with the extremely raised demand, which needs to be addressed to ensure the livability and resilience. In this context, this study highlights the purchasing behavior of foreign city users pointing out the critical situation of Ukrainians fleeing the war and the settlement of some Eastern European cities, e.g., Poland, Bulgaria, Romania and the Czech Republic. Specifically, it highlights the Ukrainians' purchasing behavior, who moved to the Czech Republic (CZK). This study provides a comprehensive analysis of the relationship between the status of a foreigner city user and their online and in-store purchases. Among other things, it is important to take into account the purchasing behavior of these foreign city users, which may also differ significantly than local ones. With an increasing number of foreigners residing or visiting different cities worldwide, understanding the impact of their user status on purchasing behavior becomes crucial for businesses. This purchasing behavior may also affect urban logistics, and consequently the city development. Understanding the influence of foreign city user status on online and in-store purchases allows to predicting short and long-time demand for the industry, aiming to better adapt the actions to implement to limit the freight transport impacts.

The investigation of the segment of foreign city users is a vital component in promoting city sustainability and livability. By considering the needs and preferences of this diverse group, urban planners and policymakers can develop strategies that foster inclusive, environmentally responsible, and culturally vibrant cities. This paper contributes to the growing body of knowledge on city sustainable development and underscores the significance of recognizing and accommodating the segment of foreign city users in urban planning and policy-making processes.

The remain of the paper is organized as follows. Section 2 presents the research background on the investigated issue. Section 3, established the hypothesis, presents applicated methods and models for its achievements; Section 4 presents the application to a real case study (i.e., Czech Republic). The last sections, Section 5 and 6, discuss the results obtained, and draw conclusions and the further development of this study.

2. Research background

In recent years, the rapid increase in foreign city users has presented unique challenges in last-mile logistics, a critical component of urban transportation and sustainability. However, the existing literature on this topic has not adequately addressed the distinct characteristics and challenges faced by these users. This knowledge gap makes it challenging to assess the applicability of existing findings to this specific problem and hinders the development of effective solutions.

The phenomenon of foreign city users encompasses individuals from diverse backgrounds, including tourists, expatriates, and temporary residents. Their presence in urban areas significantly impacts the demand for services, particularly in the last-mile logistics sector. However, studies focusing specifically on this segment and their effects on urban logistics systems are relatively limited. Since foreign city users are a multilateral challenge and cover several livability areas at once, it is rational to conduct an analysis from several adjacent sides. It will include the following issues: (1) understanding demand for last-mile freight delivery for all users of the city, including foreigners; (2) analyzing the purchase behavior of the city users allows to implement strategies closer to the real needs of customers.

2.1. Demand for urban last-mile goods delivery

Demand for last-mile goods delivery for city users has been critical in many global urban areas. With the rise of e-commerce and the evolution of consumer behavior, last-mile delivery has become a key component of the supply chain (Ignat and Chankov, 2020). Valuable contribution to the understanding of demand forecasting in urban logistics, presented by Comi (2020), develops a framework that can be used to estimate and forecast urban goods flows

accurately, providing a foundation for more efficient resource allocation and decision-making processes. A recent study (Corejova, et al., 2022) highlights the importance of understanding the needs and preferences for developing effective last-mile delivery solutions for all city users (domestic and foreign). A systematic literature review examined research on last-mile delivery in urban areas was carried out by Lyons and McDonald (2023). Advanced technology plays a significant role in optimizing last-mile delivery services (Simoni et al., 2020). Scientists admit that advanced tracking, physical internet and e-commerce (Markowska, et al. 2023), last-mile communication platforms (Peng, Thompson, Zhang, 2021), use of drones for last-mile delivery (Osakwe, et al., 2022), cargo bikes (Hagen, Scheel-Kopeinig, 2021), parcel locker (Vakulenko, et al., 2018), consumer-driven logistics techniques (Galkin et al, 2021) can help reduce costs and increase efficiency in the delivery process. However, foreign city users often face barriers to accessing these services due to language, cultural differences, and last-mile challenges, low familiarity with such innovations. The last-mile issue is even more pronounced because it refers to the final leg of the journey, which is usually the most challenging. Foreign city users are often unfamiliar with local e-commerce, products, and services, and face multiple difficulties accessing public transport. Additionally, language barriers and a lack of information about delivery options and policies can make it difficult for foreign users to take advantage of delivery services.

Galkin et al (2017) highlighted key role of consumers in last-mile logistics. Filiopoulou et al. (2022) explored customer preferences and challenges concerning last-mile delivery options from various stakeholders on sustainable last-mile delivery in urban e-commerce markets. Kiba-Janiak et al. (2021) highlighted different preferences of local users and the importance of understanding the needs of different user groups. Comi (2021) showed the importance of understanding consumer behavior patterns to optimize urban freight delivery in a dynamic demand context. Kunytska et al (2021) focused on various factors influencing shoppers' choices and propose decision-support methods for enhancing last-mile logistics efficiency. The insights from these studies can inform policymakers, logistics providers, and urban planners in devising strategies that meet the dynamic demands of last-mile logistics and contribute to sustainable urban development. Simultaneously, literature review has showed that foreign city users had different preferences than local users, highlighting the importance of understanding the needs of different user groups. Foreign city users have different expectations and habits compared to local users, which can impact the delivery process. According to a recent study by KPMG (2020), last-mile demand for foreign city users is a crucial issue that needs to be addressed to ensure their seamless transportation. Emerging research (Corejova, et al, 2022) indicates on the need to customize last-mile delivery solutions that cater to specific needs. City users may have different preferences and expectations compared to local users, such as a desire for a wider range of product options or more flexibility in delivery times.

Overall reviewed studies indicate that foreign city users' purchasing behavior is influenced by factors such as product uniqueness, affordability, proximity, language barriers, and availability of discounts. However, more research is needed to examine the purchasing behavior of different groups of foreign city users and to determine the effectiveness of policy interventions in promoting local shopping according to their background. Such a comprehensive research efforts aims to contribute to create a more robust foundation for designing and implementing efficient last-mile delivery solutions including foreign city users.

2.2. Purchase behavior in the Czech Republic

There are some studies characterized the shopping behavior of foreign tourists in Central Europe, including the factors that influence their purchasing decisions. Neger and Uddin (2020) found that foreign tourists were more likely to purchase products that were unique to the region and that their shopping behavior was influenced by factors such as age, gender, and country of origin. The study only focuses on the shopping behavior of foreign tourists, which may not be representative of the behavior of other foreign city users. Osman et al. (2020) and Kovács et al. (2020) found that foreign students were more likely to purchase products that were affordable and that their shopping behavior was influenced by factors such as proximity to their accommodation and availability of discounts. Eger et al. (2021) examines the factors that influence the purchase behavior of foreign shoppers in the Czech Republic. Miroslava et al. (2020) provide valuable insights into the purchase behavior of foreign tourists in the Czech Republic. However, the study only focuses on the tourism and may not accurately reflect the purchase behavior of foreign city users in other economic sectors.

Bartók et al. (2021) investigated the e-commerce and cross-border shopping behavior of Czech consumers. Analyzed studies do not present a lot of variety around foreign city users and may not accurately reflect their purchase behavior. However, it is essential to recognize their limitations in terms of representativeness, industry focus, scope, and specificity to e-commerce. Further research that encompasses a wider range of foreign city users and considers various industries and online shopping behavior would be beneficial to gain a more comprehensive understanding of their purchase behavior.

A comprehensive review of the existing literature reveals a growing interest in the impact of user status on purchasing behavior. While numerous studies have explored the influence of nationality and cultural background on consumer behavior, limited research specifically addresses the impact of foreign city user status. However, studies on customer segmentation, cross-cultural studies, and consumer trust provide valuable insights that can be applied to the context of foreign city users.

The existing literature on the purchase behavior of refugees and temporarily displaced persons highlights the complex and multifaceted nature of this phenomenon, as well as the significant challenges that they may face in accessing goods and services. However, many studies focus on specific groups of refugees in particular contexts (Pereira, et al, 2010; Renzaho and Burns, 2006), limiting the generalizability of findings. Additionally, there is a need for more research on the longer-term impacts of displacement on purchase behavior, as well as the potential role of social networks and community organizations in supporting refugees in accessing the goods and services they need. The humanitarian logistics studies (Starr and Van Wassenhove, 2014) do not focus on purchase behavior, it may indirectly relate to foreign city users in crisis situations where their consumption patterns and purchase behaviors are influenced by emergency response and humanitarian efforts. Overall, highlight the importance of understanding the cultural and social factors that influence refugees' purchasing and the need to address the obstacles and challenges that limit their participation in local markets.

Effective policy measures can address the drawbacks associated with purchase behaviors of foreign city users during mega-events. These may include the promotion of sustainable mobility options, such as public transport and pedestrian mobility, along with measures to restrict car use. Effective marketing and communication strategies can encourage tourists to make sustainable and socially responsible purchases. Stakeholder engagement and coordination are key to designing and implementing effective policies to manage the impacts of mega events on purchase behaviors.

3. Materials and methods

3.1. Expectations

Previous studies have explored various aspects related to online and in-store purchases, last-mile logistics, and the behavior of foreigner city users. The research has highlighted the importance of personalized marketing strategies, seamless shopping experiences, localized content, and efficient delivery options to cater to the diverse needs of this consumer segment. However, there is a gap in the literature regarding the specific influence of foreigner city user status on purchase behavior and the role of last-mile logistics. Based on it, we expect that foreign city users are more likely to make online purchases rather than in-store purchases due to factors such as convenience, familiarity, and trust in established e-commerce platforms, although they can have some issues related to the delivery address (sometimes, it could be temporary), delivery attendance (not at-home issue), home-delivery available options, etc. However, the specific influence of foreign city user status on the last-mile logistics, including delivery times, costs, and customer satisfaction, remains few investigated. Such an expectations are below pointed through the results of a survey.

3.2. Survey

A survey was carried out in Czech cities, which consisted of a questionnaire distributed via Telegram messenger, University of Pardubice community, Facebook accounts and personal interviews. Overall were made 307 respondents: 39% of them was a Foreign city user (Ukrainians – 35%, other nationality– 10%).

The questionnaire was structured in several parts. The first section contained questions on socio-demographic data such as age, gender, country of residence, education, employment status, role within the household, average monthly income in CZK (approximately, 24CZK = 1EUR), household size, and number of cars in the household.

In the second section, people were asked about their weekly purchasing activity and post-move behavior in CZK. This study includes some daily and weekly consumption products such as clothing and accessories, children's goods, food, medicines and cosmetics, car accessories, electronics, and home and garden goods. Respondents were asked to indicate the price, number of purchases, purchase channel (online, in-store, do not buy) and delivery method. The data collected refers to purchases made in the week prior to the interview.

The survey was conducted from July to August 2022. Based on the proposed sampling technique, in the first phase, we included households from the cities of Pardubice, Prague, Brno, and Ostrava. The largest share of initial contacts was in Pardubice, as the research group was based there. This fact plays a key role in the construction of the dataset, as the selected cities are represented by the following proportions of households in the sample: Pardubice - 80.64%, Prague - 9.09%, Brno - 7.31% and Ostrava - 2.96%. The evaluation of the socio-economic data of the respondents made it possible to assess the presence of similarities and differences in the population.

4. Results

A multinomial logistic regression is used to model and predict categorical dependent variables with three or more categories. It is based on a logistic function that calculates the probabilities of each category. In other words, it predicts the probability of occurrence of each of multiple possible outcomes as follows:

$$\ln\left(\frac{\text{prob}[\text{online}]}{1 - \text{prob}[\text{online}]}\right) = \alpha + \beta_1 \text{Gender} + \beta_2 \text{PinH} + \beta_3 \text{HMCars} + \beta_4 \text{DL} + \beta_5 \text{Access2Car} + \beta_6 \text{FCU} + \beta_7 \text{Age} + \beta_8 \text{Status} + \beta_9 \text{Income} + \beta_{10} \text{ProfStatus} \quad (1)$$

where

- $\text{prob}[\text{Online}]$ is the probability to buy online;
- Gender is a dummy variable that takes a value of 1 for Male and 0 for Female;
- PinH is a number of people in the household of respondent, people;
- HMCars is a number of cars in household, units;
- DL is a dummy variable for the driving licenses, takes value of 1 if is presence or 0 for absence;
- Access2car is free-access-to-car dummy variable, takes value of 1 if is free access to car or 0 for else;
- FCU is a dummy variable for the status of foreign city users, takes value of for 1 for positive status of foreigner city user or 0 for not;
- Age is the Age of respondent. Takes by selecting 1 of the 6 category of different age range: '18 – 29', '30 – 39', '40– 49', '50 – 59', '60 and older', 'less than 18' (<18);
- Status is a role inside of the household. Takes by selecting 1 of the 6 categories of different role inside of household: 'I'm grandfather/grandmother', 'I live alone', 'I live with my partner/husband', 'I'm child of family', 'I'm mother/father of family', 'Neighbours friends';
- Income is the average monthly income of respondent role. Takes by selecting 1 of the 4 category of different age range: 'less ten 15 000', '15 001 - 25 000 CZK', '25 001 – 35 000 CZK', '35 001 CZK and more';
- ProfSt is the Occupancy of the respondent. Takes by selecting 1 of the 9 categories of different professional statuses: 'Entrepreneur', 'Housewife/Househusband', 'Incapacity for work', 'Not working (looking for a job)', 'Retired', 'Self-employed', 'Student', 'Working with permanent contract', 'Working with temporary contract'.

The final model contains the main effects only without any interaction effects. Stepwise regression results revealed that the following attributes were not significant at the five per cent level: number of people in the household of the respondent (PinH), number of cars in household (HMCars), driving licenses (DL), a role inside of the household (Status), the average monthly income of the respondent role (Income), the professional status of the respondent (Income). The Age of the respondent, with a range over 60 years old, has been also exclude for the above reason.

The significant variables (Table 1) in the model are the gender (*Gender*), the status of foreign city users (*FCU*), and age range (*Age*). The estimated odds ratios indicate the change in the odds of making an online purchase associated with a unit increase or change in each variable. The gender ($\text{Gender}=0$) has an odds ratio of 0.574, indicating that being female decreases the odds of making an online purchase by approximately 42.6% compared to being male. The status of foreign city users ($\text{FCU}=0$) has an odds ratio of 0.355, suggesting that individuals without a positive foreign city user status are less likely to make online purchases compared to those with a positive status. Regarding age range, the results show that individuals in the age groups have the highest odds ratio, indicating a higher likelihood of making online purchases compared to other factors. A negative *Constant* term (-0.766) has been estimated. The logistic regression model allows us the estimation of the probability of making an online purchase based on the given independent variables which consider the foreign status of user.

Table 1. Logistic regression model parameter estimates.

Parameter	Estimated Regression Model (Maximum Likelihood)			Likelihood Ratio Tests		
	<i>Estimate</i>	<i>Standard Error</i>	<i>Estimated Odds Ratio</i>	<i>Chi-Square</i>	<i>Df</i>	<i>p-value</i>
	Include to the model					
CONSTANT	-0.74679	0.59150	-	-	-	-
Gender=0	-0.55450	0.25672	0.57436	4.72838	1	0.0297
FCU=0	-1.03578	0.28499	0.35497	14.5976	1	0.0001
age=18 – 29	1.58556	0.59454	4.88206			
age=30 – 39	1.25571	0.65598	3.51033			
age=40 – 49	1.38386	0.65844	3.99029	18.0752	5	0.0029
age=50 – 59	-0.08677	0.7675	0.91688			
age=less than 18 years old (<18)	0.62862	0.80492	1.87501			

The output shows the results of fitting a logistic regression model to describe the relationship between Online and 3 independent variable(s). Because the p-value for the model in the Analysis of Deviance table is less than 0.05, there is a statistically significant relationship between the variables at the 95.0% confidence level. In addition, the p-value for the residuals is less than 0.05, indicating that the model is significantly worse than the best possible model for this data at the 95.0% confidence level. The pane also shows that the percentage of deviance in Online explained by the model equals 7.3%. This statistic is similar to the usual R-Squared statistic. The adjusted percentage, which is more suitable for comparing models with different numbers of independent variables, is 3,40521%.

5. Discussion

The impact of foreign city users on online purchasing is becoming increasingly evident, considering the current globalized nature of e-commerce. It is undeniable that this group heavily relies on online shopping due to its convenience and accessibility. Such behavior is affirmed by previous studies that have outlined the significance of wide product ranges, price comparisons, and the trust foreign users place in well-established e-commerce platforms (Galkin et al., 2017; Comi, 2021; Kunytska et al, 2021). The dynamics of purchasing behavior, especially in the realm of e-commerce, have been influenced by the influx of foreign city users. This study has shown that these individuals have distinct patterns when it comes to online shopping, and businesses must be adapted in understanding and catering to these patterns.

Our findings echo these previous studies, but also add nuance by emphasizing the significant roles of gender, foreign city user status, and age in shaping online purchasing tendencies. Women, particularly foreign city users, were found to be less inclined to shop online compared to their male counterparts. This might be linked to various factors, including cultural habits or the types of products preferred by women. On the other hand, younger foreign city users, especially those between 18-29, were found to be more predisposed to online shopping. This is in line with broader trends of digital native generations being more attuned to e-commerce.

However, while online shopping is a dominant trend among foreign city users, brick-and-mortar stores still hold relevance. Certain products, especially those that are perishable or need immediate use, often see more in-store purchases. This could also be influenced by the allure of a tactile shopping experience, especially for those

who are new to the city and want to immerse themselves in local culture. Cultural preferences and unique shopping experiences might also incentivize these users to explore local stores.

In light of these findings, businesses could evolve to cater to this demographic more effectively:

- *Cultural Sensitivity and Localization*, businesses should consider adapt their marketing messages, product offerings, and user interfaces to align with the cultural preferences of foreigner city users; this can help establish a sense of familiarity and increase their propensity for both online and in-store purchases;
- *Language Support*, providing multilingual customer support and translating important information into the native languages of foreigner city users can enhance their trust and confidence in the purchasing process.
- *Last-Mile Logistics Optimization*, improving delivery speed, reliability, and convenience is crucial to encourage foreigner city users to make purchases, whether online or in-store; collaborations with local logistics providers and leveraging technology can aid in overcoming infrastructure limitations and ensuring efficient last-mile delivery;
- *Summarizing*, understanding the unique challenges and preferences of foreign city users is imperative for businesses and policymakers; this study provides a foundation for understanding these dynamics, but continuous research and adaptation are essential to stay relevant in the evolving urban consumer landscape.

6. Conclusions

The study highlights the significance of considering the unique characteristics and challenges faced by foreign city users in last-mile logistics. The literature review revealed a lack of sufficient research in this specific area, making it difficult to apply existing findings to this problem. Therefore, an analysis from multiple perspectives is necessary to understand the demand for last-mile goods delivery, purchase behavior in the Czech Republic, and the impact of industry trends and mega events on foreign city users.

The discrete choice model results indicate that gender, the status of foreign city users, and age range significantly influence the likelihood of making online purchases. Female gender decreases the odds of online purchases compared to males, while individuals without a positive foreigner city user status are less likely to make online purchases. Younger age groups, particularly those aged 18-29, exhibit higher odds of online purchases compared to older age groups.

In conclusion, this study emphasizes the importance of considering the purchasing behavior of foreign city users in last-mile logistics and urban development. By understanding their unique challenges and tailoring strategies to meet their needs, businesses and policymakers can effectively address the increased demand and contribute to the livability and resilience of cities, particularly in the European Union. Future research should continue to explore this topic and provide more comprehensive insights into the behavior and preferences of foreign city users in different contexts. This, in turn, can contribute to increased customer satisfaction, higher conversion rates, and stronger brand loyalty.

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