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# Mobile shopping before COVID-19 and intention to continue mobile shopping after the pandemic. Methodological aspects of gender-based empirical study<sup>1</sup>

**Zakupy mobilne przed pandemią COVID-19 i zamiar ich kontynuacji po pandemii. Metodologiczne aspekty badań empirycznych uwzględniających kryterium płci**

## Abstract

This paper aims to determine whether there is an association between gender and mobile shopping buying behavior both during and post-COVID-19 period. Three types of categorical variables were defined: the installation of mobile shopping apps before the pandemic, the use of mobile shopping apps before the pandemic, and the decision to stop using mobile shopping apps after the pandemic. In a pilot study, the population only included Polish respondents. The field survey method was applied to collect the primary data. In April 2021, the survey was launched via social media. Primary data were collected from 102 respondents. The non-parametric statistical method was selected as a suitable analytical technique and the chi-square test of independence was used to test the hypotheses. According to the pilot study, gender does not influence installation of mobile shopping apps before the pandemic, the use of mobile shopping apps before the pandemic, or the intention to stop using mobile shopping apps after the COVID-19 period. The findings are significant for mobile shopping application developers, modern trades, and business decision-makers in the Polish market. Meanwhile, the applied research methodology is most relevant for future similar kinds of research studies.

## Keywords

COVID-19 pandemic, mobile shopping, gender, Polish respondents, consumer behavior, non-parametric test

## Streszczenie

Celem artykułu jest ustalenie, czy istnieje związek między płcią a zachowaniami związanymi z zakupami mobilnymi podczas COVID-19 i okresie postcovidowym. Zdefiniowano trzy rodzaje zmiennych zależnych: instalacja aplikacji do zakupów mobilnych przed pandemią, korzystanie z aplikacji do zakupów mobilnych przed pandemią oraz pomysł zaprzestania korzystania z aplikacji do zakupów mobilnych po pandemii. Populację w badaniu pilotażowym stanowili polscy respondenci. Badanie ankietowe zostało uruchomione za pośrednictwem mediów społecznościowych w kwietniu 2021 r. Dane pierwotne zostały zebrane od 102 respondentów. Jako technikę analityczną zastosowano nieparametryczną metodę statystyczną, wykorzystując test niezależności chi-kwadrat do sprawdzenia hipotez badawczych. Badanie pilotażowe wykazało, że nie było istotnego związku między płcią a instalowaniem mobilnych aplikacji zakupowych przed pandemią, między płcią a korzystaniem z aplikacji do zakupów mobilnych przed pandemią, oraz między płcią a decyzją o zaprzestaniu korzystania z aplikacji do zakupów mobilnych po pandemii. Wyniki są istotne dla twórców aplikacji do zakupów mobilnych, nowoczesnych branż i decydentów biznesowych na polskim rynku, a zastosowana metodologia badań jest odpowiednia dla prowadzenia analogicznych badań naukowych w przyszłości.

## Słowa kluczowe

pandemia COVID-19, zakupy mobilne, płeć, polscy respondenci, zachowania konsumentów, test nieparametryczny

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## Introduction

This article aims to understand the fundamental nature of Polish consumer behavior in terms of using mobile devices for shopping during the pre-COVID-19 times and the post-COVID-19 era. At the time of writing, many parts of the world are not under strict lockdown. However, there is no clear evidence stating the end of the pandemic. The COVID-19 pandemic may become endemic (Shmerling, 2022, p. 19). Having started in early 2020, the pandemic has been causing several disruptions in the short- and mid-term. The current situation presents huge, unprecedented challenges to retail managers, consumers, and scholars (Pantano et al., 2020). Indeed, COVID-19, as both health and economic crisis, has seriously affected consumers, businesses, and industries. Within this context, consumers initially expressed some extreme behaviors, which, however, subsided relatively soon. Importantly, consumers started shifting to online grocery shopping, which may induce more fundamental and enduring changes in grocery retail (Eriksson & Stenius, 2020). The main distinction between e-commerce and m-commerce is that in e-commerce, consumers have access to a website for buying products using a computer terminal, whereas in the case of m-commerce they use a mobile device (Dholakia & Dholakia, 2004; Principato et al., 2021). Marketing management practitioners believe that business must understand their customers' and consumers' behavior equally. The fundamental reason for the above observation is that the demand for any company's product is determined by the combined effort of both customers' and consumers' behavior (KeyDifferences.com, 2015). The target group of the research was mobile shoppers i.e. those using mobile shopping applications. Referring to *Harvard Business Review*, "Now, because of smartphones and tablets, marketers need to fundamentally rethink things. Shopping is becoming an iterative rather than a serial process. Consumers no longer go shopping, they always are shopping" (Martin, 2013). Hence, mobile shoppers are the consumer group of mobile shopping applications.

Thus, the fundamental assumption of the study is that the consumer demand for mobile shopping applications is determined by mobile shoppers. From the business point of view, keeping your existing consumers with your product line is more challenging than attracting new consumers. If the present consumer of your product is also willing to consume your company's product in the future, it means that your product has a sustainable demand.

As many as 77% of Polish Internet users do shopping online. It is estimated that over 22 million Polish people buy things by using Internet platforms and it represents a remarkable rise, compared to the pre-pandemic time (Gara, 2021). However, it's not clear what kind of devices Polish people use for mobile shopping over the Internet. Thus, the pilot study has been conducted to fulfill the gap in understanding the mobile shopping behavior of Polish respondents in the context of both pre-pandemic, and the post-pandemic.

## Research objectives

The first pilot study was intended to determine whether the respondents were demonstrating a significant increase in the scale of usage of online shopping through mobile phone apps before the pandemic, compared to during the pandemic. It was also meant to determine whether there was a difference in the average monthly number of online shopping transactions during the pandemic, among respondents based on their age group, a paired sample *t*-test being the dominant inferential statistical tool for the analysis (Wiścicka-Fernando, 2021).

In 2022, the same study extended to understanding the Polish respondents' mobile shopping behavior in terms of the number of transactions per month during the pandemic, based on the respondents' gender. Moreover, the study was extended ever further, to understand the mobile buying behavior of Polish respondents in terms of the number of transactions per month during the pandemic, based on the chosen socio-demographic characteristics such as gender and place of residence. For those extended studies, matched-paired *t*-test, one-way ANOVA, Kruskal-Wallis test, Wilcoxon signed rank test, Shapiro-Wilk test, and chi-square test of independence were applied for the primary data analysis. By the time of writing this paper, the two extended studies are in the process of publishing after the peer review acceptance.

However, this paper aims to determine whether there is an association between gender and mobile shopping buying behavior, both during and after the COVID-19 pandemic. The respondents' gender was the independent variable of the study. The dependent variable number one was 'installation of mobile shopping apps before the pandemic', number two was 'the use of mobile shopping apps before the pandemic', and number three was 'the decision to stop using mobile shopping apps after the pandemic'.

Conceptual framework of the study

The conceptual framework of the study (Figure 1) is illustrating the hypothetical relationship between the independent variable of the study (gender) and the dependent variables of the study.

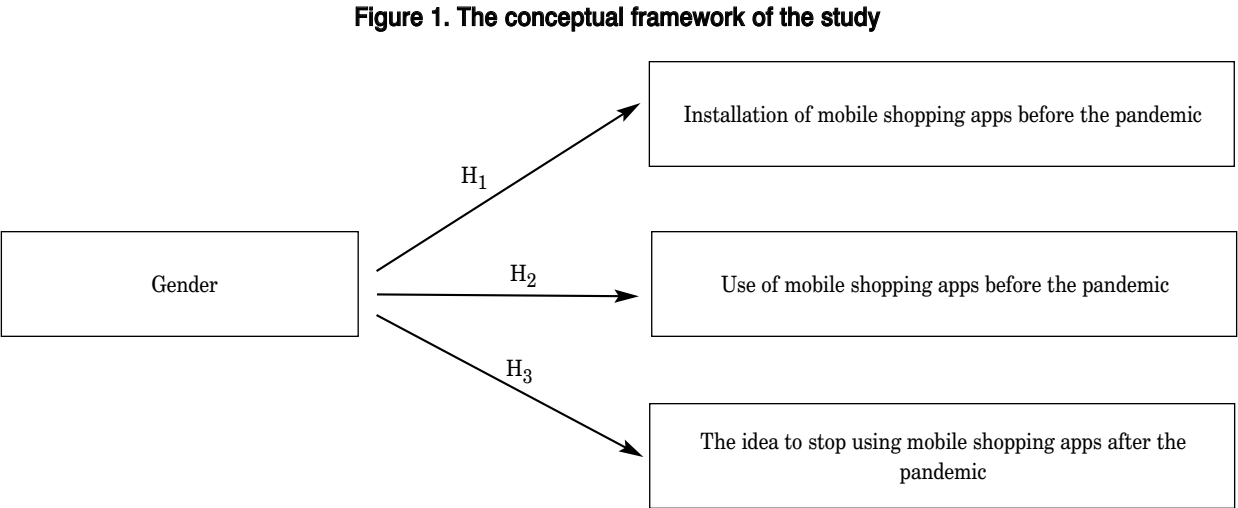
Gender is usually incorrectly conceptualized as binary (female/male). Sex, indeed, refers to a set of biological attributes in humans and sex is determined by birth, whereas gender refers to the socially constructed roles, behaviors, and identities of female, male, and gender-diverse people. It influences how people perceive themselves and each other, how they behave and interact, and the distribution of power and resources in society (CIHR Institute of Gender and Health, 2012). Moreover, According to the Oxford English Dictionary, gender refers to the state of being male or female as expressed by social or cultural distinctions and differences rather than biological ones; the collective attributes or traits associated with a particular sex or determined as a result of one's sex. Also, a (male or female) group is characterized in this way (Oxford English Dictionary, 2023). Despite different definitions, the researcher adopted the Oxford English Dictionary definition for the study. According to the conceptual framework of the study and research objectives, the formulated hypotheses are:

- H<sub>01</sub>: The respondent's gender and installation of mobile shopping apps before the pandemic are independent.
- H<sub>a1</sub>: The respondent's gender and installation of mobile shopping apps before the pandemic are not independent.
- H<sub>02</sub>: The respondent's gender and use of mobile shopping apps before the pandemic are independent.

- H<sub>a2</sub>: The respondent's gender and use of mobile shopping apps before the pandemic are not independent.
- H<sub>03</sub>: The respondent's gender and the idea to stop using mobile shopping apps after the pandemic are independent.
- H<sub>a3</sub>: The respondent's gender and the idea to stop using mobile shopping apps after the pandemic are not independent.

Methodology

Based on the fundamentals of the field survey techniques, on the 10th of April 2021 an online data collection survey was launched using the Microsoft Teams platform. The target group included Polished respondents only, the entire research questionnaire being written in Polish. By 13th of April 2021, answers from 102 Polish respondents were recorded with nominal, ordinal, and ratio data (Wiścicka-Fernando, 2021). The researcher used descriptive and nonparametric statistics for the analysis. According to that, the chi-square test of independence was used to test the hypotheses with 0.5 alpha. During the data collection, the 5-point Likert scale was used to collect the ordinal scale data. After the survey, the ordinal-scale data were summarized into the contingency table for the chi-square test of independence. Hence, "A Chi-square Test of Independence is used to determine whether or not there is a significant association between two categorical variables" (Zach, 2020). The table illustrations were used to present the data analysis. All the calculations were done using Microsoft Excel. According to the conceptual



Source: own elaboration.



framework of the study, the dependent variable was gender. Thus, sex and gender equity in research SAGER guidelines were consulted for the analysis, reporting, and discussion (Heidari et al., 2016).

## Results

### Descriptive statistics

There were the total number of 102 Polish respondents, 71 of whom (c. 69.60%) were mobile shoppers (Wiścicka-Fernando, 2021). 74 respondents (c. 73%) were female and 28 (approximately 27%) were male. Out of 71 mobile shoppers, 53 (c. 75%) were female and 18 (c. 25%) were male (Field Data, 2021).

### Testing hypothesis

Table 1 illustrates contingency data summary to test hypothesis  $H_{01}$ . According to that, the calculated chi-square test statistic was 4.50, the degree of freedom was 4, the  $p$ -value was 0.3422 and the alpha value was 0.05. It was observed that the  $p$ -value was greater than the alpha value ( $0.3422 > 0.05$ ), hence the decision 'failed to reject the null hypothesis'. Thus, the conclusion was that a chi-square test of independence showed no significant association between gender and installation of mobile shopping apps before the pandemic –  $\chi^2 (4, N = 71) = 4.50, p > 0.05$ .

Table 2 illustrates a contingency data summary to test hypothesis  $H_{02}$ . According to that, the calculated chi-square test statistic was 5.35, the degree of freedom was 4, the  $p$ -value was 0.2529 and the alpha value was 0.05. Considering that the  $p$ -value was greater than the alpha value ( $0.2529 > 0.05$ ), the decision 'failed to reject the null hypothesis'. Therefore, the conclusion was that a chi-square test of independence revealed no significant association between gender and the use of mobile shopping apps before the pandemic –  $\chi^2 (4, N = 71) = 5.35, p > 0.05$ .

Table 3 illustrates a contingency data summary to test hypothesis  $H_{03}$ . According to that, the calculated chi-square test statistic was 1.31, the degree of freedom was 4, the  $p$ -value was 0.8585 and the alpha value was 0.05. The observation was that the  $p$ -value was greater than the alpha value ( $0.8585 > 0.05$ ), hence the decision 'failed to reject the null hypothesis'. Thus, the conclusion was that a chi-square test of independence showed no significant association between gender and the decision to stop using mobile shopping apps after the pandemic,  $\chi^2 (4, N = 71) = 1.31, p > 0.05$ .

## Discussion

According to the chi-square test for independence, there is enough evidence to declare no significant association between gender and selected dependent variables (Table 4). Accordingly, gender has no association with the installation of mobile shopping apps before the pan-

**Table 1. The contingency table for the respondent's gender and installation of mobile shopping apps before the pandemic**

Gender	I installed mobile shopping applications (apps) on my smartphone before the COVID-19 pandemic				
	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
Female	7	1	2	16	27
Male	0	0	0	5	13

Source: own study based on the survey.

**Table 2. The contingency table for the respondent's gender and the use of mobile shopping apps before the pandemic**

Gender	I used to do mobile shopping regularly, using the app, before the pandemic				
	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
Female	4	4	7	15	23
Male	1	0	6	6	5

Source: own study based on the survey.

**Table 3. The contingency table for the respondent's gender and the decision to stop using mobile shopping apps after the pandemic**

Gender	I will stop using mobile shopping apps as the pandemic ends				
	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree
Female	36	11	3	0	3
Male	12	5	1	0	0

Source: own study based on the survey.

**Table 4. The summary of the testing hypothesis**

Hypotheses	Chi-square test statistic	df	$\alpha$	p-value	Observation	Decision
H <sub>01</sub> H <sub>a1</sub>	4.50	4	0.05	0.3422	$p\text{-value} > \alpha$	Fail to reject the null hypothesis
H <sub>02</sub> H <sub>a2</sub>	5.35	4	0.05	0.2529	$p\text{-value} > \alpha$	Fail to reject the null hypothesis
H <sub>03</sub> H <sub>a3</sub>	1.31	4	0.05	0.8585	$p\text{-value} > \alpha$	Fail to reject the null hypothesis

Source: own study based on the survey.

demic; gender has no association with to use of mobile shopping apps before the pandemic; and gender has no association with the decision to stop using mobile shopping apps after the pandemic.

In economic terms, sustainable consumer demand for any product or service is enormously significant in long-run business success (Investopedia, 2023). The business should be able to understand and also predict the demand (NetSuite.com, 2023). Most of the time, external changes or shocks tend to change consumer demand (AHDB, 2023). Where consumers' intentions are stable regarding what they are currently consuming, it is a good sign of constant demand. The COVID-19 pandemic can be considered an exogenous shock (EPW, 2022) which influences consumer behavior. Logically, different socio-demographic properties may shape different behaviors towards the same external shock.

Accordingly, the study has found that socio-demographic properties such as gender do not influence decisions to give up mobile shopping usage in the future. As the key finding, the researcher points out that both female and male Polish mobile shoppers would continue mobile shopping even after the pandemic. Hence, the findings are significant for mobile application developers, online shopping service providers,

and marketing decision-makers. However, the researcher would also suggest business companies to have a study carried out focusing on their customer base, before making critical business decisions. In such cases, the present study can be used as a methodological benchmark.

Taking into consideration a study conducted during the pre-pandemic period, consumers' intention to continue mobile shopping, determined by satisfaction and perceived ease of use, significantly influenced different user groups (Shang & Wu, 2017). The rule of social distance was one of the key COVID-19 restrictions. The attitudes toward social distancing were a significant stimulus for purchasing through mobile devices; indicating that an individual's adherence to recommended behaviors during the pandemic does positively influence the adoption of mobile shopping (Kao & L'Huillier, 2022). However, an average Polish household operates in a busy environment (Poland, 2018). Time has become a more limited resource than ever. Polish households are spending significant amount of time doing their shopping. People spend a lot of time travelling from home to shopping location using private or public transport. When considering the overall cost of doing traditional shopping, the mobile shopping method may be much more cost-effective.

However, the study does not provide reasons behind the Polish female and male respondents' preference for the continuity of using mobile shopping methods. Thus, the researcher would suggest conducting an extended research study to understand the phenomena and reasons behind the Polish female and male respondents' preference to

carry on the practice and methods of mobile shopping. Moreover, a limited sample size can be seen as a fundamental limitation of the study, so its findings should not be generalized over the entire the Polish population. However, the research methodology applied in the study does provide a clear guideline for future research studies.

## Notes/Przypisy

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