

CONSUMPTION PATTERNS AND INFLUENCING FACTORS OF POTTED HERBS: A STUDY ON THE POLISH MARKET

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ABSTRACT

The objective of this study is to identify consumption patterns and the factors influencing the selection of potted herbs in Poland. The research was conducted on a sample of $n = 1000$ using the survey method with the CAWI technique. The data underwent quantitative analysis, including descriptive statistics (percentages of responses), Pearson correlation analysis, and factor analysis using the principal component method. To assess the significance of relationships between socio-demographic variables and the study variables, the non-parametric Kruskal-Wallis test, as well as the Mann-Whitney U, Wilcoxon W, and Z tests, were used. Over 80% of Poles buy fresh potted herbs, most often in discount supermarkets and less often in health food shops, small grocery stores, greengrocers, and market stalls. The most frequently purchased species are parsley, mint, marjoram, coriander, and lovage. The primary reasons for purchasing potted herbs are flavor and seasoning qualities, health considerations, and nutritional value. The most important factors in the purchasing decision are aroma and taste, attractive appearance and freshness, health benefits, and nutritional value. Factors cited as encouraging consumers to consume fresh potted herbs more frequently included chemical-free cultivation and the use of organic methods, a wider range of products, lower prices, and better flavor. The socio-demographic characteristics of consumers had a significant impact on their purchasing behavior. These characteristics also differentiated the importance of factors influencing purchasing decisions, encouraged more frequent consumption of potted herbs, explained the reasons for a lack of interest in potted herbs among those who do not buy them, and identified factors that could encourage these people to consume fresh herbs. This study focuses specifically on consumption patterns of potted herbs in Poland, a segment influenced by sustainability trends and health-conscious behaviors. The study's findings may be relevant to producers and distributors of potted herbs, particularly for planning production and distribution to meet actual consumer requirements and preferences.

Keywords: potted herbs, preferences, purchase motives, consumer behavior

INTRODUCTION

Purchase decisions are a key aspect of the study of consumer behavior. For this reason, it is important to understand the factors influencing buyer decisions. As Kotler and Keller [2015] point out, a purchase decision is a process in which consumers choose and decide whether to buy, what to buy, when, where, and how to buy. This decision is influenced by many internal and external factors, such as product quality, brand, price, experience, and the consumer's socio-economic characteristics. Consumer preferences, shaped by product features and other factors considered in the purchasing decision, play a crucial role in the decision-making process [Suryaningrum et al. 2024]. Buying behavior refers to the choices and actions of consumers when purchasing goods. Although many scholars have studied buying behavior across various products, it has not yet been thoroughly examined in the context of potted herbs.

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The literature on the subject reveals a lack of research on the consumption of potted herbs in Poland, both quantitatively and behaviourally. Existing studies focus mainly on the general category of herbs, primarily in the markets of selected countries in Western Europe, Asia, and North America, whilst overlooking the specific nature of potted products and consumer conditions in Central and Eastern Europe. It is therefore appropriate to conduct a study identifying consumption patterns and the determinants of pot herb selection on the Polish market. In pursuit of the research objective, the following research problem was set:

RQ1. Where and how often do consumers purchase potted herbs in Poland?

RQ2. What motives and factors influence potted herb purchases?

RQ3. What factors encourage and foster more frequent consumption of fresh potted herbs?

RQ4. What are the reasons for the lack of interest in potted herbs?

RQ5. Do consumers' socio-demographic characteristics influence their motives and behavior in the fresh potted herb market?

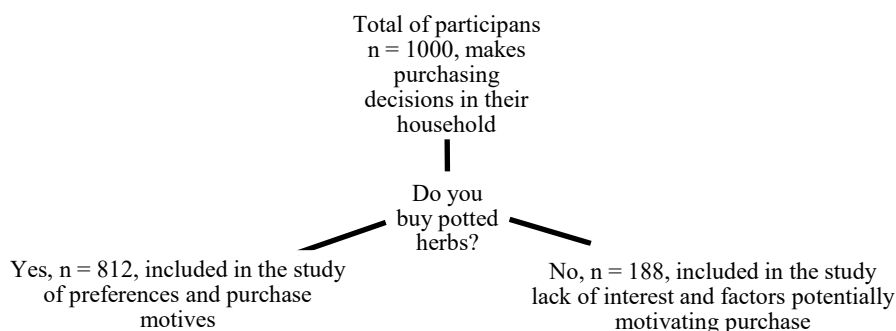
Herbs and spices have been known and used since the dawn of history, serving as a source of food for humans, as well as preservatives and medicinal agents [Jiang 2019, Chaudhari et al. 2021, Wiluk 2024, Grigore-Gurgu et al. 2025]. Many species of herbal plants have found use as spices, and their aromatic and medicinal properties have a beneficial effect on the process of digestion and the absorption of nutrients [Nurzyńska-Wierdak 2012]. An example is basil, one of the few herbs that was incorporated into cuisine specifically because it tastes good, that is, due to its very pleasant aromatic flavor profile [Spence 2024]. Herbs constitute an important group of horticultural products and have long been recognized as key elements in the culinary arts [Jiang 2019]. Research among plant buyers has shown that herbs are a popular category of household purchases [Knuth et al. 2023]. Fresh herbs used as spices or additives to dishes are utilized in many different cuisines and food products, but they are consumed in relatively small quantities [Awulachew 2024], especially compared to other horticultural plant-based food products [Kucharski et al. 2022]. However, according to the aforementioned authors, the popularity of herbal plants worldwide is on the rise. The value of the global fresh herbs market in 2025 was USD 6.56 billion. It is projected that this market will grow from USD 7.18 billion in 2026 to USD 14.86 billion in 2034, showing an average annual growth rate of 9.52% during the forecast period [Fresh Herbs Market size...]. Therefore, a growth rate of 10% per year is a strong indicator of the spices market's potential [Newerli-Guz 2017]. In recent years, potted herbs have represented a growing segment of both the horticultural and food markets in Europe and Poland. The observed growth results, among other things, from changes in consumption trends, with a key driver being the increasing demand for fresh and natural ingredients, as consumers become more aware of the health benefits of eating fresh herbs. Globalization of culinary practices also plays a significant role in market development, as consumers, discovering international cuisines, frequently use fresh herbs. Convenience is becoming an important factor as well, since herbs help save time and effort in meal preparation. Hence, this trend reflects a desire for kitchen convenience while also enjoying the flavor of fresh herbs and their health benefits. The correlation between health benefits and culinary uses often leads to an increased interest in organic herbs from local farms [Fresh Herbs Market 2025–2030]. According to Wiluk [2024], changes in consumer awareness make them more likely to seek traditional and organic methods of nutrition and health care. Widyanyngtyas et al. [2023] state that health awareness and attitudes are important predictors of consumers' intentions toward herbal products. Abdullah and Salleh [2010], by identifying consumer preferences and opinions on health and natural resources in the context of the use of herbs and herbal products, showed that factors influencing consumer behavior include product commercialization, consumer preferences, and media influence. Consumers expect herbal products to be produced organically or at least in line with the principles of sustainable agriculture. In this context, product quality plays an important role in shaping consumers' purchasing behavior: when a consumer perceives a product as high quality, they are more likely to buy it. In the herb sector, much attention is directed towards farmers, who are the first and most important link in the supply chain [Kucharski et al. 2022]. Philips et al. [2024] point to potential implications of herbs' fragrance in the retail environment for consumers' health and well-being. These researchers emphasize the role of the retail environment in influencing food choices and sales: exposure to herbs activates associations with cooking and homemade meals, which in turn motivates consumers to choose healthier ingredients for preparing meals at home.

MATERIALS AND METHODS

The study was conducted as part of the TANGO project "Natural elicitors in the production of herbs of increased pro-health and consumer quality", carried out at the University of Life Sciences in Lublin. To achieve the article's goal, a portion of the empirical research was used. The research tool used to identify the demand side of the

potted herb market in Poland was a structured questionnaire, and the data collection method was a CAWI (computer-assisted web interviewing) survey. The primary data, based on a questionnaire developed by the researchers, was collected by an external contractor, namely the BIOSTAT Research and Development Center. Participants were informed that they had consented to participate in the study and could withdraw if any question proved too sensitive. The study's target group was adult Poles. The research sample was limited to individuals who make purchasing decisions in their households. This criterion was verified based on a qualifying question included in the research questionnaire. The study was conducted on a research group of $n = 1000$ respondents. A stratified random sampling method was used, with the place of residence (province) serving as the stratum. Proportions by respondents' gender and age were also taken into account. The survey question "Do you buy potted herbs?" made it possible to identify the group of actual buyers, totalling $n = 872$ individuals. However, non-buyers were not disqualified from participation. This was based on the understanding that, as product markets mature, demand expansion can occur by converting non-buyers into buyers. Therefore, in the group of non-buyers of potted herbs ($n = 188$), respondents were asked about the motivators that could influence their purchasing decisions. Consequently, the study of purchasing preferences and motivations for buying potted herbs covered the group of actual buyers, while the study of lack of interest and potential motivation for purchasing included those who do not currently buy these products (Figure 1).

Figure 1. Selection of participants



The survey questions used a 5-point Likert scale, most commonly used in psychometrics in social sciences [Joshi et al. 2015]. For buyers of potted herbs, the survey questions covered, among other things, the types and frequency of purchases, including places of purchase, annual spending levels, reasons for buying, the importance of factors influencing purchasing decisions, and motivators for increased consumption of potted herbs. Those who do not currently buy these products were asked about reasons for their lack of interest in potted herbs and potential motivators encouraging them to consume these products.

The research model assumes that potted herb consumption patterns are determined by demographic factors and product characteristics. These factors influence consumers' purchasing motives, which then shape their consumer behavior, such as purchase frequency and product selection.

In the statistical analysis of the data, descriptive statistics (% of indications), Pearson correlation analysis, and factor analysis using the principal components method with Varimax rotation and Kaiser normalization were applied, following preliminary Kaiser-Meyer-Olkin and Bartlett's tests. To examine the significance of relationships between socio-demographic variables and the study variables, the nonparametric Kruskal-Wallis test, Mann-Whitney U test, Wilcoxon W test, and Z tests were used. Inference was conducted at a significance level of $\alpha < 0.05$. Statistical analysis was performed using IBM SPSS 29.

CHARACTERISTICS OF THE RESPONDENT SAMPLE

In the sample of purchasing respondents, there were slightly more women than men, while in the non-purchasing group, men predominated (Table 1). In both groups, people over the age of 60 were the majority. Individuals under 18 years of age were excluded from the study. Nearly 35% of all respondents had completed secondary education, and 29% held higher education degrees. Every tenth respondent had only primary or lower secondary education. Among the respondents, 60% were professionally active, while 28% were retirees or pensioners. Nearly

61% of respondents had a disposable income per family member between 1,001 and 3,000 PLN, and slightly more than one in five (21.9%) reported 3,001–5,000 PLN. Twelve percent of respondents were in the lowest income group, with up to 1,000 PLN per family member. The sample was dominated by people from two-person families (30.4%) and three-person families (27.4%). More than one in ten respondents belonged to single-person households (11.8%), and an equal proportion came from five-person or larger families. All respondents reported making purchasing decisions for their households.

Table 1. Characteristics of the sample of respondents (%)

Characteristics of respondents		The entire sample n = 1000	Buyers n = 812	Non-acquiring n = 188
Overall		100.0	81.2	18.8
Gender	woman	52.4	55.9	37.2
	man	47.6	44.1	62.8
Age	under 18 years old	0.0	0.0	0.0
				9.6
				10.6
	18–29 years old	16.3	17.9	15.4
				17.0
				47.3
	30–39 years old	19.3	21.3	10.6
	40–49 years old	18.5	19.2	15.4
Education	50–59 years old	14.7	14.2	17.0
	60 years and older	31.2	27.5	47.3
	primary/junior high	10.2	6.5	26.1
	vocational education	26.0	23.8	35.6
	secondary	34.9	37.3	24.5
Social status	higher	28.9	32.4	13.8
	unemployed	3.0	2.8	3.7
	pupil/student	3.4	3.6	2.7
	employed professionally	59.7	63.2	44.7
	pensioner/retiree	28.0	25.0	41.8
Disposable income in the household / per person	I take care of the house, without official status	5.9	5.4	8.0
	Up to 1000 PLN	12.0	10.1	20.2
	1001–3000 PLN	60.6	61.6	56.4
	3001–5000 PLN	21.9	22.9	17.6
Number of people in the household	>5000 PLN	5.5	5.4	5.6
	1	11.8	9.7	20.7
	2	30.4	29.3	35.1
	3	27.4	28.8	21.3
	4	18.9	19.7	15.4
	5	7.8	8.4	5.3
	6 or more people	3.7	4.1	2.1

RESULTS

The results of the conducted research indicate that 81.2% of Poles buy herbs in pots. The most frequently purchased species are parsley, mint, and marjoram, with coriander and lovage also commonly bought. A significant percentage of respondents also buy rosemary, thyme, and oregano rarely or occasionally (Table 2; RQ1). Almost one in five respondents very often buys potted herbs at discount stores, and nearly 14% grow them for their own use (Table 2). Kucharski [2022] also emphasizes that both in rural and small-town settings, as well as increasingly in urban environments, residents have access to both home-grown culinary herbs and ready-to-use fresh herbs widely available in many stores. Never purchase potted herbs: 48.4% directly from the producer, 38.2% from health food stores, and 34% from small grocery stores. Respondents rarely buy potted herbs in health food stores (26.6%), in small grocery stores (26.5%), at greengrocers (24.1%), and at marketplaces (23.8%). This may indicate a lack of or limited selection of fresh herbs in these distribution outlets (RQ1).

Table 2. Frequency and place of purchasing potted herbs (%)

	Never	Rarely	Sometimes	Quite often	Very often
Species					
Basil	1.1	22.0	44.2	26.5	6.2
Rosemary	13.7	35.1	36.1	13.1	2.1
Mint	9.0	18.3	31.0	28.6	13.1
Coriander	23.9	28.7	31.4	12.2	3.8
Parsley	10.5	13.3	19.3	32.1	24.8
Lovage	22.2	25.5	25.6	17.0	9.7
Oregano	12.8	25.9	30.8	21.8	8.7
Thyme	18.0	26.8	32.4	17.1	5.7
Marjoram	17.0	20.7	25.1	23.8	13.4
Place of purchase					
Supermarket/hypermarket	10.2	21.4	34.7	24.5	9.1
Discount stores	4.8	12.2	31.7	32.3	19.1
Small grocery stores	34.0	26.5	24.3	10.5	4.8
Greengrocers	19.0	24.3	28.3	19.5	9.0
Health food stores	38.2	26.6	20.9	8.9	5.4
Marketplace	20.9	23.8	30.8	16.3	8.3
Directly from the manufacturer	48.4	20.2	18.6	8.1	4.7
I grow it myself	25.5	18.6	25.6	16.4	13.9

Every third respondent spends 51–100 PLN per year on purchasing potted herbs, every fourth spends 101–200 PLN, and every fifth spends 21–50 PLN. More than 200 PLN per year is spent on potted herbs by 14.5% of respondents, while up to 20 PLN is spent by 7%. Over the years, changes have occurred in the consumption of potted herbs. Nearly 70% of Polish consumers of potted herbs have noticed these changes, with almost 60% reporting an increase in consumption and only 8% a decrease. The most important reasons for purchasing potted herbs are primarily their flavor and seasoning qualities (91.6% rating them as important or very important), health benefits (87.2%), and nutritional value (82.3%), as in Table 3 (RQ2).

Table 3. Importance of reasons and factors for purchase when buying potted herbs (%)

	Doesn't matter	Not important	Indifferent	Important	Very important
Reasons for purchase					
Flavor qualities – spicy	0.5	2.0	5.9	46.8	44.8
Nutritional value	1.0	4.7	12.1	46.7	35.6
Aesthetic values (meals)	1.6	10.0	22.2	48.5	17.7
Matters of taking care of health	1.0	2.1	9.7	47.2	40.0
Applied diet	7.3	9.4	26.8	36.9	19.6
Factors					
Attractive appearance, freshness	0.6	3.0	8.5	38.5	49.4
Nutritional values	0.9	2.7	13.9	43.0	39.5
Scent, taste	0.1	1.8	5.8	37.7	54.6
Health benefits	0.5	2.7	11.7	45.0	40.1
Brand (producer)	10.7	13.8	38.1	28.0	9.5
Price	1.5	5.9	18.1	53.8	20.7
Country of origin	2.5	9.1	21.7	44.1	22.7
Packaging method	2.2	7.1	27.8	50.5	12.3
Complete information on the packaging	2.1	6.5	20.6	48.0	22.8

The most important factors when purchasing fresh potted herbs are their aroma and taste (92.3% of respondents indicated very important or important), attractive appearance and freshness (87.9%), health-promoting properties (85.1%), and nutritional values (82.5%). Brand is important or very important to 37.5% of respondents, price to 74.5%, country of origin to 66.8%, packaging method to 62.8%, and complete information on the packaging to 70.8% (Table 3). The information regarding the brand (producer) was frequently deemed to be of minimal significance or unimportant (RQ2).

Production of herbs without the use of chemicals and organic methods (82.5% of responses), a wider assortment (82.2%), lower price (81.1%), and better taste qualities (80.1%) would be the main incentives for more frequent consumption of fresh potted herbs (RQ3). According to Wiluk [2024], consumer awareness is changing, with people increasingly seeking traditional and organic methods of nutrition and health care. The needs of family members are also an important factor determining more frequent purchases of potted herbs (80.8%). As Durmaz and Durmaz [2014] demonstrated, family members such as a spouse, children, and parents can exert a strong influence on a consumer's purchasing behavior. Greater availability of herbs for sale and higher incomes were indicated as "rather yes" or "definitely yes" by 78.0% and 67.2% of respondents, respectively (Figure 2).

Respondents uninterested in potted herbs mainly indicated the use of dried herbs (62.1% of responses as important and very important), as in Figure 3. For more than one in three respondents, the lack of interest in potted herbs is associated with high prices (38.3%) and limited availability (34.5%) (RQ4).

People who do not buy potted herbs would be encouraged to consume them, "rather yes" or "definitely yes" by a lower price (69.7%), organic production (65.4%), and the needs of family members (61.2%), as in Figure 4.

Figure 2. Factors encouraging more frequent consumption of potted herbs (percentage of responses)

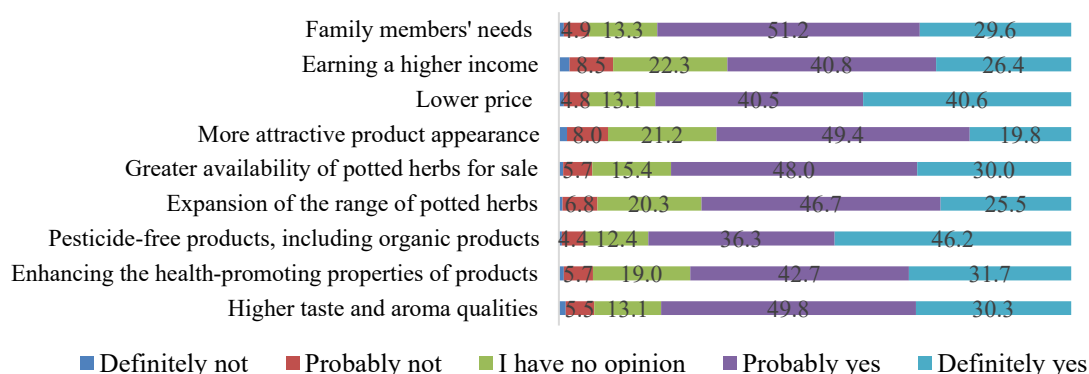
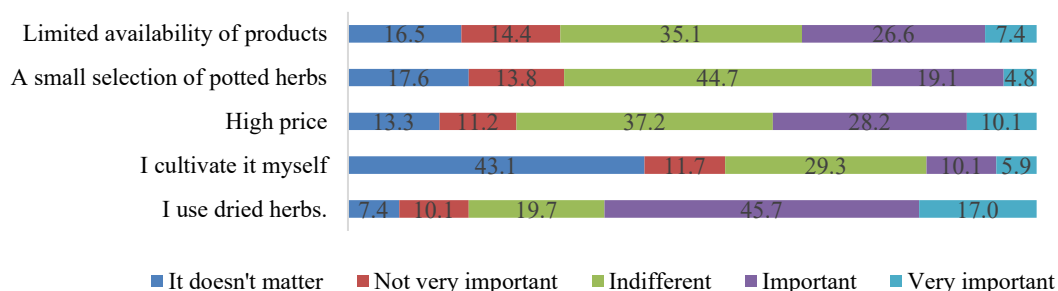
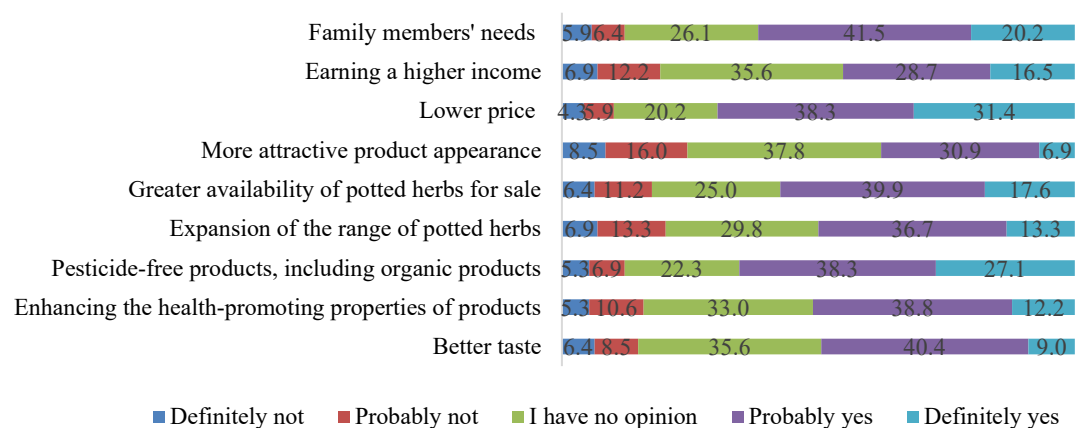


Figure 3. Reasons for lack of interest in potted herbs (percentage of responses)



The socio-demographic characteristics of respondents significantly differentiated their opinions and behaviors, including the frequency of purchasing various types of potted herbs, the places where they bought them, the average annual expenditure on purchasing potted herbs, as well as the motives for their purchase and the importance of various factors influencing purchases. They also differentiated the factors encouraging more frequent consumption of potted herbs, the reasons for lack of interest in potted herbs among people who do not buy them, and the factors that could encourage these individuals to consume fresh herbs (RQ5).

Figure 4. Factors encouraging consumers to consume fresh potted herbs (percentage of responses)



The frequency of purchasing various species of potted herbs was significantly influenced by socio-demographic characteristics, especially age (in terms of purchasing basil, rosemary, mint, coriander, oregano, and thyme), as well as gender (in terms of purchasing basil, coriander, and lovage), education (in terms of purchasing mint, lovage, and marjoram), social status (in terms of purchasing basil, rosemary, mint, and oregano), number of people in the family (in terms of purchasing basil, mint, and coriander), and income (when it comes to purchasing coriander and thyme). The frequency of purchasing potted herbs in various locations was primarily differentiated by age, social status, and the number of people in the household, and less frequently by education (in terms of buying potted herbs at a greengrocer's, at a marketplace, and directly from the producer) and income (when it comes to growing herbs independently). Annual expenditures on purchasing potted herbs differed significantly depending on the respondents' age, social status, income, and the number of people in the household (Table 4).

The motives for purchasing herbs in pots significantly differentiated primarily by the respondents' gender, as well as age, social status, and income (in terms of health consciousness). The importance of various factors influencing purchases varied significantly depending on the demographic characteristics of the surveyed population (Table 2). Most often, significant differences in evaluation concerned factors such as attractive appearance/freshness, aroma, taste, country of origin, and type of packaging. Based on factor analysis, two groups of factors influencing the purchase of potted herbs were identified (Table 5). These factors explained 52.7% of the variability in the assessment of these factors. The first component included factors such as brand, country of origin, type of packaging, and information on the packaging, while the second consisted of features directly related to the product, such as attractive appearance/freshness, nutritional value, aroma, taste, and health-promoting properties.

The significance of factors encouraging more frequent consumption of potted herbs depended on all the socio-demographic characteristics studied, with different factors being of varying importance to different groups of respondents. Most often, the significance of these factors varied according to gender, household size, and income. The socio-demographic characteristics of the respondents most frequently influenced opinions regarding the production of herbs without pesticides, including organic ones, as a factor encouraging more frequent consumption of potted herbs. Based on factor analysis, two groups of factors encouraging greater consumption of potted herbs were identified (Table 6). These factors explained 54.5% of the variation in the assessment of these factors. The first component included factors related to the characteristics of the products—potted herbs—and the needs of family members, while the second included economic factors such as lower product prices and achieving higher incomes.

The indicated reasons for the lack of interest in potted herbs among people who do not purchase them depended on gender (regarding the use of dried herbs and high prices), age and education (regarding the use of dried herbs instead of fresh ones), income (due to the limited availability of products), and family size (because of growing them themselves). The significance of factors encouraging people who do not buy fresh herbs in pots to consume them varied significantly depending on gender (in terms of the more attractive appearance of the products), disposable income (depending on the possibility of earning a higher income), and household size (according to the needs of family members). Significant interdependencies between the studied variables were also confirmed in the Pearson correlation analysis.

Table 4. Value and significance of nonparametric tests for grouping variables: gender, age, education, social/professional status, disposable income per person in the household, and number of people in the family

Tests	P1.	P2.	P3.01.	P3.02.	P3.03.	P3.04.	P3.05.	P3.06.	P3.07.	P3.08.	P3.09.	P4.01.	P4.02.	P4.03.	P4.04.	P4.05.	P4.06.	P4.07.	P4.08.	P5.
Grouping variable: M1 Gender																				
U	124712.000	110456.000	70839.000	80012.000	75477.000	72566.500	75780.500	74692.500	75368.500	80201.500	80672.500	79727.500	71963.500	77074.500	78494.500	75887.000	75212.500	80089.000	69405.500	75819.500
W	238238.000	248006.000	135100.000	144273.000	139738.000	175851.500	140041.500	138953.500	139629.500	183486.500	144933.500	183012.500	136224.500	180359.500	142755.500	179172.000	139473.500	183374.000	133666.500	179104.500
Z	0.000	-4.618	-3.342	-0.397	-1.802	-2.719	-1.704	-2.033	-1.833	-0.332	-0.183	-0.480	-2.913	-1.312	-0.858	-1.694	-1.878	-0.380	-3.661	-1.697
α	1.000	0.000	0.001	0.691	0.072	0.007	0.088	0.042	0.067	0.740	0.855	0.631	0.004	0.189	0.391	0.090	0.060	0.704	0.000	0.090
Grouping variable: M2. Age																				
H	0.000	36.752	17.039	9.476	25.572	18.607	7.569	2.552	11.810	10.204	2.124	36.718	11.184	67.424	23.641	13.877	7.388	15.508	1.872	11.716
α	1.000	0.000	0.002	0.050	0.000	0.001	0.109	0.635	0.019	0.037	0.713	0.000	0.025	0.000	0.000	0.008	0.117	0.004	0.759	0.020
Grouping variable: M3. Education																				
H	0.000	90.719	1.398	3.768	1.048	3.076	18.762	22.262	3.503	2.369	14.278	4.904	2.982	2.930	12.580	7.376	11.899	10.271	3.078	1.343
α	1.000	0.000	0.706	0.288	0.790	0.380	0.000	0.000	0.320	0.499	0.003	0.179	0.394	0.403	0.006	0.061	0.008	0.016	0.380	0.719
Grouping variable: M4. Social/professional status																				
H	0.000	25.079	24.955	21.671	19.056	18.801	5.471	7.815	17.003	8.903	4.793	28.743	2.390	37.188	17.233	16.284	11.867	12.864	6.068	31.310
α	1.000	0.000	0.000	0.000	0.001	0.001	0.242	0.099	0.002	0.064	0.309	0.000	0.664	0.000	0.002	0.003	0.018	0.012	0.194	0.000
Grouping variable: M5. Number of people in the household																				
H	0.000	25.381	19.348	6.121	24.389	23.584	13.491	14.080	24.559	20.052	11.922	23.178	4.342	42.939	31.454	25.009	12.996	30.895	11.707	27.696
α	1.000	<0.001	0.002	0.295	<0.001	<0.001	0.019	0.015	<0.001	0.001	0.036	<0.001	0.501	<0.001	<0.001	<0.001	0.023	<0.001	0.039	<0.001
Grouping variable: M6. Disposable income in the household / per person																				
H	0.000	15.727	3.528	11.857	7.562	11.622	1.232	2.303	2.313	10.948	3.316	6.190	1.333	6.928	2.817	7.155	3.870	5.852	9.897	25.568
α	1.000	0.001	0.317	0.008	0.056	0.009	0.745	0.512	0.510	0.012	0.345	0.103	0.721	0.074	0.421	0.067	0.276	0.119	0.019	0.000
	P5.	P6.	P7.01.	P7.02.	P7.03.	P7.04.	P7.05	P8.01.	P8.02.	P8.03.	P8.04.	P8.05.	P8.06.	P8.07.	P8.08.	P8.09.	P9.01.	P9.02.	P9.03.	P9.04.
Grouping variable: M1 Gender																				
U	75819.500	74676.000	71688.000	59636.000	68087.500	66301.000	71504.000	67665.500	63215.000	71770.500	69504.000	76587.500	76730.000	69817.000	70877.000	68271.500	72730.500	71673.000	70368.000	74486.500
W	179104.500	177961.000	135949.000	123897.000	132348.500	130562.000	135765.000	131926.500	127476.000	136031.500	133765.000	140848.500	140991.000	134078.000	135138.000	132532.500	136991.500	135934.000	134629.000	138747.500
Z	-1.697	-2.290	-3.213	-7.064	-4.262	-4.950	-3.065	-4.522	-5.879	-3.232	-3.861	-1.471	-1.501	-3.654	-3.401	-4.202	-2.795	-3.076	-3.559	-2.187
α	0.090	0.022	0.001	0.000	0.000	0.000	0.002	0.000	0.000	0.001	0.000	0.141	0.133	0.000	0.001	0.000	0.005	0.002	0.000	0.029
Grouping variable: M2. Age																				
H	11.716	2.973	11.095	18.726	18.873	19.562	3.490	24.494	12.044	17.402	15.095	1.546	4.184	46.644	8.304	6.288	9.407	3.463	25.065	1.378
α	0.020	0.562	0.026	0.001	0.001	0.001	0.479	0.000	0.017	0.002	0.005	0.819	0.382	0.000	0.081	0.179	0.052	0.484	0.000	0.848
Grouping variable: M3. Education																				
H	1.343	5.041	3.403	1.545	7.506	6.313	2.152	1.572	4.316	1.726	2.249	11.847	5.300	11.949	6.068	5.269	0.783	1.608	3.480	3.777
α	0.719	0.169	0.334	0.672	0.057	0.097	0.542	0.666	0.229	0.631	0.522	0.008	0.151	0.008	0.108	0.153	0.853	0.658	0.323	0.287

Grouping variable: M4. Social/professional status																				
H	31.310	6.853	4.160	10.992	10.667	11.852	8.148	20.668	8.864	9.843	9.147	5.832	1.053	34.899	5.309	5.150	6.105	4.191	21.751	7.139
α	0.000	0.144	0.385	0.027	0.031	0.018	0.086	0.000	0.065	0.043	0.058	0.212	0.902	0.000	0.257	0.272	0.191	0.381	0.000	0.129
Grouping variable: M5. Number of people in the household																				
H	27.696	1.879	5.922	4.520	10.016	3.456	5.742	12.515	10.011	5.172	6.485	16.871	1.815	5.793	12.950	6.731	26.452	13.400	20.616	14.054
α	<0.001	0.866	0.314	0.477	0.075	0.630	0.332	0.028	0.075	0.395	0.262	0.005	0.874	0.327	0.024	0.241	<0.001	0.020	<0.001	0.015
Grouping variable: M6. Disposable income in the household / per person																				
H	25.568	6.114	7.545	7.535	6.110	9.732	1.713	9.952	7.240	7.981	6.791	2.993	14.654	5.876	8.540	4.395	5.993	4.746	9.939	2.647
α	0.000	0.106	0.056	0.057	0.106	0.021	0.634	0.019	0.065	0.046	0.079	0.393	0.002	0.118	0.036	0.222	0.112	0.191	0.019	0.449
P9.05.	P9.06.	P9.07.	P9.08.	P9.09.	P10.	P11.01.	P11.02.	P11.03.	P11.04.	P11.05.	P12.01.	P12.02.	P12.03.	P12.04.	P12.05.	P12.06.	P12.07.	P12.08.	P12.09.	
Grouping variable: M1 Gender																				
H	67983.000	69287.000	78304.500	71819.000	75778.000	66325.000	3245.000	3810.500	3302.000	3615.500	4110.000	3944.500	4091.000	4021.000	3981.500	3708.000	3390.500	3618.000	3546.500	3733.000
W	132244.000	133548.000	142565.500	136080.000	140039.000	130586.000	10266.000	10831.500	10323.000	10636.500	6595.000	6429.500	6576.000	11042.000	6466.500	10729.000	10411.500	10639.000	10567.500	10754.000
Z	-4.321	-3.889	-0.960	-2.997	-1.807	-4.868	-2.600	-0.938	-2.392	-1.507	-0.057	-0.546	-0.114	-0.316	-0.429	-1.224	-2.147	-1.493	-1.683	-1.159
α	0.000	0.000	0.337	0.003	0.071	0.000	0.009	0.348	0.017	0.132	0.954	0.585	0.909	0.752	0.668	0.221	0.032	0.136	0.092	0.247
Grouping variable: M2. Age																				
H	2.777	3.928	6.303	1.672	3.204	33.595	9.490	0.934	8.720	4.226	0.966	2.409	2.096	6.417	3.143	1.205	2.945	5.796	2.982	2.465
α	0.596	0.416	0.178	0.796	0.524	0.000	0.050	0.920	0.068	0.376	0.915	0.661	0.718	0.170	0.534	0.877	0.567	0.215	0.561	0.651
Grouping variable: M3. Education																				
H	6.961	2.719	1.830	9.789	3.047	2.321	10.675	3.859	5.591	2.490	1.083	7.378	0.493	2.546	1.362	1.645	4.135	0.668	0.336	1.468
α	0.073	0.437	0.608	0.020	0.384	0.509	0.014	0.277	0.133	0.477	0.781	0.061	0.920	0.467	0.715	0.649	0.247	0.881	0.953	0.690
Grouping variable: M4. Social/professional status																				
H	5.083	3.274	5.157	2.394	7.421	28.024	3.092	0.526	3.955	1.923	2.794	7.961	3.520	7.687	4.225	1.920	1.943	1.892	1.877	3.826
α	0.279	0.513	0.272	0.664	0.115	0.000	0.543	0.971	0.412	0.750	0.593	0.093	0.475	0.104	0.376	0.750	0.746	0.756	0.758	0.430
Grouping variable: M5. Number of people in the household																				
H	12.144	4.776	11.542	5.852	10.365	15.275	4.204	11.090	4.136	1.616	4.397	5.580	6.620	1.669	2.548	0.690	1.770	5.081	0.965	14.470
α	0.033	0.444	0.042	0.321	0.066	0.009	0.520	0.050	0.530	0.899	0.494	0.349	0.250	0.893	0.769	0.984	0.880	0.406	0.965	0.013
Grouping variable: M6. Disposable income in the household/ per person																				
H	6.072	7.155	2.878	14.085	4.770	6.395	0.839	4.343	5.029	3.316	8.130	2.017	2.768	1.884	5.126	6.116	1.855	5.867	7.877	2.239
α	0.108	0.067	0.411	0.003	0.189	0.094	0.840	0.227	0.170	0.345	0.043	0.569	0.429	0.597	0.163	0.106	0.603	0.118	0.049	0.524

U – Mann-Whitney test; W – Wilcoxon test; Z – Z tests; H – Kruskal-Wallis test; α < 0.05; P1. Do you make purchasing decisions in your household? P2. Do you buy potted herbs, e.g., basil, rosemary, etc.? P3. How often do you buy potted herbs? P3.1. Basil; P3.2. Rosemary; P3.3. Mint; P3.4. Coriander; P3.5. Parsley; P3.6. Lovage; P3.7. Oregano; P3.8. Thyme; P3.9. Marjoram; P4. Where and how often do you buy fresh potted herbs? P4.1. Supermarket/hypermarket; P4.2. Discount stores; P4.3. Small grocery stores; P4.4. Green-grocers; P4.5. Health food stores; P4.6. Marketplace; P4.7. Directly from the producer; P4.8. Home cultivation; P5. How much do you spend on average per year on potted herbs? P6. Has your consumption of potted herbs changed over the past years? P7. Reasons for purchasing potted herbs; P7.1. Taste – seasoning qualities; P7.2. Nutritional value; P7.3. Aesthetic value (of meals); P7.4. Health concerns; P7.5. Dietary reasons; P8. How important are the following factors/elements to you when purchasing this type of food? P8.1. Attractive appearance, freshness; P8.2. Nutritional value; P8.3. Smell, taste; P8.4. Health-promoting properties; P8.5. Brand (producer); P8.6. Price; P8.7. Country of origin; P8.8. Packaging method; P8.9. Complete information on the packaging; P9. What would encourage you to consume fresh potted herbs more often? P9.1. Better taste and aroma; P9.2. Enhanced health-promoting properties of products; P9.3. Products grown without pesticides, including organic products; P9.4. Broader selection of potted herbs; P9.5. Greater availability of potted herbs for sale; P9.6. More attractive appearance of products; P9.7. Lower price; P9.8. Higher income; P9.9. Needs of family members; P10. Would you purchase potted herbs produced using natural production methods? 11. Please indicate and assess the reasons for lack of interest in potted herbs; 11.1. I use dried herbs; 11.2. I grow them myself; 11.3. High price; 11.4. Limited selection of potted herbs; 11.5. Limited product availability; 12. What would encourage you to consume fresh potted herbs? P12.1. Better taste and aroma; P12.2. Enhanced health-promoting properties of products; P12.3. Products grown without pesticides, including organic products; P12.4. Broader selection of potted herbs; P12.5. Greater availability of potted herbs for sale; P12.6. More attractive appearance of products; P12.7. Lower price; P12.8. Higher income; P12.9. Needs of family members

Table 5. Rotated component matrix regarding factors influencing the purchase of potted herbs

Variables (factors)	Component	
	1	2
Attractive appearance, freshness	0.018	0.776
Nutritional values	0.359	0.655
Scent, taste	0.021	0.822
Health benefits	0.434	0.588
Brand (producer)	0.770	-0.054
Price	0.255	0.293
Country of origin	0.694	0.211
Packaging method	0.719	0.154
Complete information on the packaging	0.688	0.293

Factor extraction method – principal components. Rotation method – Varimax with Kaiser normalization

Table 6. Rotated component matrix regarding factors encouraging more frequent consumption of potted herbs

Variables (factors)	Component	
	1	2
Higher taste and aroma qualities	0.733	0.125
Improving the health-promoting properties of products	0.754	0.117
Products from pesticide-free production, including organic ones	0.734	0.145
Expansion of the range of potted herbs	0.690	0.105
Greater availability of potted herbs for sale	0.695	0.244
More attractive product appearance	0.567	0.309
Lower price	0.184	0.800
Earning a higher income	0.123	0.850
Family Members' Needs	0.463	0.377

Factor extraction method – principal components. Rotation method – Varimax with Kaiser normalization

DISCUSSION

This research focuses on identifying the demand side of the potted herb market and determining the main factors influencing purchasing decisions in the Polish market. The results indicate that 81.2% of Poles buy potted herbs. The lack of data on demand size in other countries' markets makes it impossible to compare Poland's situation, but as Behe et al. [2013] point out, there is a market segment in the United States and Canada called "herbivores," which focuses mainly on herbs, as 100% of this segment buys herbs. These consumers prefer basil, lower prices, water-saving production, and recyclable containers. Meanwhile, culinary herb consumers in South Africa prefer fresh herbs (about 96%), followed by dried and ground herbs [Mphafi et al. 2023]. In the USA, chefs mainly buy fresh basil, parsley, and coriander, and are also interested in potted herbs as an additional offering from local farmers [Goss et al. 2007]. A study among adult Australians showed that 64.3% use herbs and spices 1–2 times a day. Herbs and spices are commonly used in Australian households, mostly during lunch and dinner, with basil, pepper, and garlic being the most popular [Wilson et al. 2025]. In Poland, people most often buy herbs in discount stores, mainly parsley, mint, and marjoram. The main reasons for buying potted herbs are their flavor and seasoning qualities, a concern for health, and their nutritional value. Polish consumers are willing to increase the frequency of consumption, mainly thanks to the availability of herbs grown without chemicals and organically. In their research, Brijesh and Soni [2019] also found that naturalness and quality are the two main factors influencing customers' decisions to buy herbal products. According to Jiang [2019], consumers increasingly turn to naturally grown herbs that can offer various health benefits, and with this awareness, the demand for organic herbs is also growing. Syafrizal and Vafaei-Zadeh [2024] demonstrated that health awareness and health value play an important role in shaping customer attitudes and purchase intentions regarding herbal products and

supplements. Ramli and Arumugam [2021] found a relationship between age and customer awareness and attitudes toward purchasing herbal products. According to these researchers, variables such as gender, education, occupation, and income do not have a significant relationship with customers' awareness and attitudes regarding herbal product purchases. The analyses carried out showed that the socio-demographic characteristics of the respondents significantly differentiated their opinions and purchasing behaviors in the potted herb market. This concerned the frequency of purchasing particular species, places of purchase, spending levels, as well as motives and factors influencing purchasing decisions. The frequency of purchasing specific herb species was particularly strongly dependent on respondents' age, which was also the most important factor differentiating species preferences (e.g., basil, rosemary, mint, coriander, oregano, thyme), while gender mainly differentiated purchases of basil, coriander, and lovage. Places of potted herb purchase varied primarily by age, social status, and household size. Income mainly differentiated the inclination to grow herbs independently.

The primary motivations for purchasing potted herbs include their flavor and seasoning properties, health considerations, and nutritional benefits. These motivations vary significantly based on respondents' gender, age, social status, and income level, particularly concerning health-related concerns. The significance of factors influencing purchasing decisions exhibits demographic variations, most notably in the evaluation of attributes such as visual appeal and freshness, aroma and taste, country of origin, and packaging method. Consumers' purchasing decisions are influenced by both image- and information-related elements, as well as the sensory and health attributes of the product, with the importance of these factors differing according to the socio-demographic profile of buyers. In the context of South African consumers, preferences regarding image- and information-related factors are shaped by labels, attractive packaging, and availability, alongside socio-economic factors such as income. While many consumers do not prioritize the origin of products, segments with higher material status may exhibit greater diversity in preferences [Mphafi et al. 2023]. Health is a predominant concern that drives consumer interest in herbal products, with health being the most frequently cited motive for purchasing natural products [Wee et al. 2014]. The naturalness of food is of paramount importance to most consumers [Romana et al. 2017], and health awareness significantly influences consumers' intentions regarding the use of herbal products [Widyaningtyas et al. 2023]. According to Ismail and Mokhtar [2015], factors such as attitude, social influence, product safety, and cultural beliefs also impact purchase intentions for herbal products. In the study by Kalra et al. [2023], safety emerged as the most critical factor in purchasing herbal products, followed by quality.

The significance of factors promoting increased consumption of potted herbs was markedly influenced by all examined socio-demographic characteristics, with the most pronounced differences observed in gender, household size, and income. The importance of herb production without pesticides, including organic methods, was particularly distinct. The reasons for disinterest in potted herbs also varied significantly according to gender, age, education, income, and household size. The most frequently cited reasons included the preference for dried herbs, high prices, limited availability, and home cultivation. Market factors, such as brand recognition, appear to be of lesser significance to Polish consumers, potentially due to the relatively nascent stage of the potted herb market in Poland. Comparable findings have been reported in studies of the Mexican herbal market [National Market... 1996]. Looking ahead, there is a possibility of customer segment diversification, with a preference for organic and high-quality potted herbs. Such herbal products are also gaining traction among urban Malaysian consumers, thereby creating opportunities for segmentation across various price ranges, distribution models, and consumer profiles [Malaysia Culinary Herbs and Spices Market Size 2026-2033, 2026].

CONCLUSIONS

Over 80% of Poles buy fresh potted herbs, most often at discount stores, and rarely at health food shops, small grocery stores, greengrocers and market stalls. Nearly half of consumers never buy potted herbs directly from the producer. Respondents cited the herbs' flavour and seasoning qualities, health benefits and nutritional value as the most important reasons for purchasing potted herbs. The most important factors when making a purchase are aroma and taste, attractive appearance and freshness, health-promoting properties, and nutritional value. Factors cited as encouraging consumers to consume fresh potted herbs more frequently included the cultivation of herbs without the use of chemicals and the use of organic methods, a wider range of products, lower prices and better flavour. The lack of interest in purchasing fresh potted herbs stems primarily from the use of dried herbs, but also from the high prices of fresh herbs and their limited availability. The socio-demographic characteristics of consumers significantly influenced behaviour regarding the frequency, place of purchase, and expenditure on

potted herbs. They also differentiated the importance of factors influencing purchasing decisions and factors encouraging more frequent consumption of potted herbs, the reasons for the lack of interest in potted herbs among those who do not buy them, and factors that could encourage these people to consume fresh herbs.

The research conducted has facilitated the identification of patterns in the consumption of potted herbs in Poland, a subject that has not been thoroughly analyzed until now. Due to the representativeness of the study's results, these findings can be generalized to the Polish population. The insights gained from this research will aid in optimizing the assortment of potted herbs in alignment with consumer preferences concerning species and quality attributes.

These results can be leveraged to implement more effective sales and promotional strategies, enabling companies to concentrate their marketing efforts on appropriate channels and thereby enhance sales. Furthermore, an understanding of consumer preferences can stimulate innovation and the development of new products, as well as simplify market segmentation and the customization of marketing communication. Consequently, this supports the promotion and enhancement of public health, increases consumer ecological awareness, and contributes to the overall well-being of society.

The limitations of this study stem from the adopted set of motives and factors influencing consumer purchasing decisions and consumption of potted herbs. Future research should expand the scope of motives for using herbs with health, aesthetic, therapeutic, and cosmetic applications. The influence of other factors, such as place of residence, family diets, and knowledge of the medicinal properties of herbs, could also be expanded.

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AUTHORS' CONTRIBUTION

W.W.: working on the conception and assumptions. W.W.: developing the methods and conducting the study. E.C., W.W.: data analysis. W.W., E.C.: manuscript writing, review, and editing.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

DECLARATION OF THE USE OF GENERATIVE AI TOOLS IN THE PROCESS OF PREPARING THE PAPER

The authors declare that no generative AI or AI-assisted technologies were used in the preparation of this manuscript.

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