CONSUMER INNOVATIVENESS AND PERSONAL CHARACTERISTICS – A STUDY AMONG THE INHABITANTS OF THE POZNAŃ AGGLOMERATION

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Abstract

Research background: One of the main ways companies gain and maintain a competitive advantage in many markets is to introduce product innovations. The degree of their acceptance by consumers is determined by many factors, among which the level of consumer innovativeness is of great importance. The paper presents the results of a study on consumer innovativeness of the adult inhabitants of the Poznań agglomeration.

Purpose: The main purpose of the study was to recognize the relationship between consumer innovativeness and consumer's personal characteristics and to advance knowledge regarding consumer innovativeness.

Research methodology: The research was carried out using the direct interview technique with the use of an interview questionnaire, on a sample of 795 adult inhabitants of the Poznań agglomeration.

Results: The results show that there is a directly proportional relationship between consumer innovativeness and education or material status and an inversely proportional relationship between consumer innovativeness and age in the pro-innovative dimension. The results indicate that there are statistically significant differences in consumer innovativeness between groups based on respondents' personal characteristics – gender, age, level of education and material situation. The results however are ambiguous.

Novelty: The novelty of the study is based on the verification of the relations between consumer innovativeness and their selected personal characteristics, with the example of Poland.

Keywords: innovation, consumer innovativeness, product management, consumer behavior

JEL classification: M30, O30

Introduction

In order to obtain and maintain a competitive advantage, enterprises are constantly striving to introduce new/innovative products to the market (Chao, Reid, Mavondo, 2012). Dynamic technological progress, including primarily the development of information and communication technologies, means that there constantly appear completely new ways of satisfying the needs of consumers, and product innovations significantly change the existing functioning of some markets or even create completely new markets. The majority of new products introduced on the market are failures and one of the main reasons behind it is the inability to conceptualize consumer innovativeness (Kaushik, Rahman, 2014) and therefore the inability to use innovativeness in market segmentation. Despite many studies on consumer innovativeness, the relationship between this concept and the consumer's personal characteristics is ambiguous (Bartels, Reinders, 2011) and because there are systematic differences in consumer innovativeness between countries (Tellis, Yin, Bell, 2009) the results of previous studies can be incomparable. The aim of the paper is to recognize the relationship between consumer innovativeness of the adult inhabitants of the Poznań agglomeration and their personal characteristics and advance knowledge regarding consumer innovativeness.

There is no single binding definition of "innovation" in literature on the subject. Rogers (1983) described innovation as an "idea, practice, or object that is perceived as new by an individual or other unit" (p. 11). Kotler and Keller (2012) also assume that "an innovation is any good, service, or idea that someone perceives as new, no matter how long its history" (p. 633). In this approach innovation is therefore associated with its subjective perception by individuals or groups of people, and not with the objective moment of its introduction on the market. According to Rothwell and Gardiner "innovation does not necessarily imply the commercialization of only a major advance in the technological state of the art (a radical innovation) but it includes also the utilization of even small-scale changes in technological know-how (an improvement or incremental innovation)" (Tidd, Bessant, 2013, p. 19). Tidd and Bessant (2013) believe that "innovation is a process of turning opportunity into new ideas and of putting these into widely used practice" (p. 19). Therefore, it is an extremely general approach when it comes to the type

of new solutions that can be called an innovation. On the one hand, one should of course agree that innovation does not necessarily have to be associated with “great radical progress”, but on the other hand, treating any change or any new idea as an innovation can make this term in some ways overused. At the current rate of technological development, new solutions (concerning products, processes, and new organizational or marketing solutions) are being introduced all the time, but this does not mean that each such change should be treated as an innovation. We have a similar approach to innovation like the one presented in the Oslo Manual. According to this OECD and Eurostat publication innovation is “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organisation or external relations” (p. 48). In turn, product innovation is the “introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses” (OECD & Eurostat, 2006, p. 50).

Innovation adoption depends on various determinants among which two are especially important; these are the attributes of the innovation itself and the characteristics of consumers. The Rogers’ taxonomy of innovation attributes included: (1) a relative advantage over other ideas; (2) compatibility; (3) comprehensiveness (complexity); (4) trialability and (5) observability (Rogers, 1983). In recent studies on innovation adoption additional perceived innovation attributes were conceptualized like for example: ecology, image, design, profitability, functional risk and physical risk (Petschnig, Heidenreich, Spieth, 2014). When it comes to consumers, such features as consumer innovativeness, product knowledge, commitment or monetary resources determine which consumers will adopt innovations earlier than others (Reinhardt, Gurtner, 2015).

There are three basic dimensions of consumer innovativeness – “innate innovativeness” (II), “domain-specific innovativeness” (DSI), and “innovative behavior” (IB) (Bartels, Reinders, 2011; Kaushik, Rahman, 2014). According to Midgley and Dowling (1978) innate innovativeness is “the degree to which an individual is receptive to new ideas and makes innovation decisions independently of the communicated experience of others” (p. 236). Steenkamp, Hofstede and Wedel (1999) define innate innovativeness as “the predisposition to buy new and different products and brands rather than remain with previous choices and consumer patterns” (p. 56). It is also referred as a “generalized unobservable predisposition toward innovations applicable across product classes” (Im, Bayus, Mason, 2003). Innate innovativeness is seen in this perspective as a generalized personality trait possessed (more or less) by every human being. Consumers, however, are not likely to adopt all product innovations introduced on the market, because their interests vary across product categories (Truong, 2013).

Consumer innovativeness therefore can be related to the specific domain of a product category. Domain-specific innovativeness “reflects the tendency to learn about and adopt innovations (new products) within a specific domain of interest” (Goldsmith, Hofacker, 1991, p. 211). DSI is perceived as an intermediary between innate innovativeness and innovative behavior (Roehrich, 2004). The last perspective on consumer innovativeness – innovative behavior is the integrator perspective, according to which consumers can show a uniform attitude toward adopting innovation in a specific or few domains (Kaushik, Rahman, 2014). Innovative behavior can be manifested by e.g. the ownership of new products, usage of new products, purchase of new products, actualized novelty-seeking, or variety-seeking behavior (Bartels, Reinders, 2011).

A systematic review of the literature on consumer innovativeness carried out by Bartels and Reinders (2011) and later by Kaushik and Rahman (2014) have shown differences between II and DSI in regard to the relationship of those two CI dimensions with product adoption. Empirical studies have found the relationship between II and product adoption to be either positive or non-existent. Despite this ambiguous relation with a new product adoption, there is a positive relationship between II and purchase and usage intention (Bartels, Reinders 2011; Kaushik, Rahman, 2014). In most empirical studies DSI has shown a positive and significant relationship with a new product adoption and purchase and usage intention (Bartels, Reinders 2011). More recent studies also have shown the positive effect of consumer innovativeness on the innovation adoption (mobile banking) (Alan et al., 2017), purchasing adoption process (purchasing innovative electronic products) (Neckel, Boeing, 2017) and intention to use product innovation (smartwatch) (Hong, Lin, Hsieh, 2017). Consumer innovativeness is therefore one of the most important innovation adoption determinants.

Although many studies have examined the relationship between consumer’s personal characteristics and their innovativeness, the results of those studies are ambiguous. In most studies age correlates negatively and significantly with innovative behavior. Income and material status in most studies have a positive and significant or partly significant relationship with innovative behavior. The relationship between education and innovative behavior seem to be ambiguous. In most studies education as well as income have a positive relationship with innate innovativeness and with domain-specific innovativeness. The relationships between age and II or DSI show ambiguous results (Bartels, Reinders, 2011; Kaushik, Rahman, 2014). Based on the literature review, we hypothesise that there is a directly proportional relationship between consumer innovativeness and education or material status and an inversely proportional relationship between consumer innovativeness and age.

Knowledge of the structure of consumers in terms of their level of innovativeness, and thus their subsequent segmentation, is extremely important in the context of preparing a strategy for introducing innovations to a specific target market. Despite many studies on consumer innovativeness all around the World it should be emphasized, that countries differ systematically in innovativeness (Tellis, Yin, Bell, 2009), which necessitates conducting primary research for each country.

1. Research design

The research on the consumer innovativeness of the adult inhabitants of the Poznań agglomeration was carried out using the direct Interview technique with the use of an interview questionnaire. The research tool was built on the basis of variables used in international research, the objective scope of which included, among others, the ratio and pace of assimilation of technological innovations (Filová, 2015), openness to technological innovations (Rosen, 2005) and broadly understood consumer innovativeness (Kuswati, Irmawati, 2018; Goldsmith, 2011). Constructed on the basis of the analysis of the literature on the subject, as well as the subjective premises of the authors, the research tool consisted of 23 variables in total, for which the Likert¹ scale was used. In the process of the empirical data analysis, the IBM SPSS Statistics tool was used.

Scopes of the empirical research:

- (1) subjective – adult inhabitants of the Poznań agglomeration;
- (2) objective – consumer innovativeness and personal characteristics;
- (3) spatial – the city of Poznań, cities and villages of the Poznań agglomeration;
- (4) temporal – the first half of 2019.

The size of the research sample was 795 observations. Due to the lack of the sampling frame, the selection of the sample was carried out through quota sampling (quota – characteristics: gender, age, place of residence) (Table 1).

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¹ Values on the Likert scale: (1) definitely not; (2) rather not; (3) neither yes or no; (4) rather yes and (5) yes, definitely.

Table 1. Comparison of the studied population and the research sample

	Age	Research population				Research sample			
		inhabitants		structure (%)		respondents		structure (%)	
		female	male	female	male	female	male	female	male
Cities of the Poznań agglomeration	18–19	1,421	1,470	0.2	0.2	2	1	0.3	0.1
	20–29	9,853	9,987	1.2	1.2	9	8	1.1	1.0
	30–39	11,859	11,588	1.4	1.4	11	13	1.4	1.6
	40–49	8,882	8,412	1.1	1.0	11	8	1.4	1.0
	50–59	9,765	8,921	1.2	1.1	11	9	1.4	1.1
	60+	20,570	13,533	2.5	1.7	18	14	2.3	1.8
Villages of the Poznań agglomeration	18–19	2,366	2,440	0.3	0.3	2	1	0.3	0.1
	20–29	15,407	15,415	1.9	1.9	15	16	1.9	2.0
	30–39	21,242	20,129	2.6	2.5	21	18	2.6	2.3
	40–49	13,710	14,039	1.7	1.7	13	12	1.6	1.5
	50–59	14,042	13,356	1.7	1.6	13	11	1.6	1.4
	60+	25,341	18,085	3.1	2.2	24	17	3.0	2.1
City of Poznań	18–19	4,591	4,668	0.6	0.6	5	5	0.6	0.6
	20–29	46,074	43,641	5.6	5.3	51	43	6.4	5.4
	30–39	48,511	47,431	5.9	5.8	45	49	5.7	6.2
	40–49	31,498	29,921	3.8	3.7	34	27	4.3	3.4
	50–59	42,226	35,129	5.2	4.3	42	33	5.3	4.2
	60+	119,797	73,680	14.6	9.0	115	68	14.5	8.6
		447,155	371,845	Sum	100.0	442	353	Sum	100.0
		Sum	819,000			Sum	795		

Source: based on Statistics Poland and own study.

Based on the literature review 4 hypotheses have been formulated and verified empirically:

H1. There is a directly proportional relationship between consumer innovativeness and education or material status and an inversely proportional relationship between consumer innovativeness and age.

H2. There are statistically significant differences in consumer innovativeness across all age groups.

H3. There are statistically significant differences in consumer innovativeness between all groups with different levels of education

H4. There are statistically significant differences in consumer innovativeness between all groups with different levels of material status

2. Results and discussion

The preliminary purpose of the study was to verify the correlation between consumer innovativeness of the adult inhabitants of Poznań agglomeration and their personal characteristics

– i.e. gender, age, level of education and their material status. In the research process the V-Cramer correlation and Kendall's Tau-b correlation were used (Table 2).

Table 2. Correlations between consumer innovativeness of the inhabitants of the Poznań agglomeration and respondents characteristics

Attitudes towards product innovations	Correlation indicators			
	V-Cramer	Kendall's Tau-b		
	gender	age	level of education	material status
1	2	3	4	5
01. Seeking information and testing new products immediately	–	–0.275 ***	0.111 ***	0.153 ***
02. Use of new products after verification by the environment	–	0.178 ***	–0.068 *	–0.069 *
03. Taking risks associated with new products	–	–0.293 ***	0.125 ***	0.168 ***
04. Expecting support from the environment in using new products	0.109 *	0.362 ***	–0.197 ***	–0.148 ***
05. Passive opinions on new products for the environment	–	–0.413 ***	0.123 ***	0.143 ***
06. Use of tested products	–	0.204 ***	–0.113 ***	–0.085 **
07. Verifying new products earlier compared to the environment	–	–0.313 ***	0.142 ***	0.149 ***
08. Leaving the verification of new products to the environment	0.120 *	0.235 ***	–0.151 ***	–0.111 ***
09. Attitude of the leader of product innovation verification	–	–0.283 ***	0.121 ***	0.124 ***
10. Testing new products	–	–0.295 ***	0.155 ***	0.145 ***
11. Quick adaptation of new products	0.138 **	–0.452 ***	0.177 ***	0.212 ***
12. Active opinions on new products in the environment	0.109 *	–0.314 ***	0.122 ***	0.145 ***
13. Occurrence of barriers related to the use of new products	0.110 *	0.298 ***	–0.153 ***	–0.201 ***
14. Interest in technological innovations	0.182 ***	–0.321 ***	0.146 ***	0.160 ***
15. Adaptation of market novelties	–	–0.300 ***	0.177 ***	0.176 ***
16. Searching for new market solutions	–	–0.272 ***	0.146 ***	0.160 ***
17. Use of proven market solutions	–	0.222 ***	–0.169 ***	–0.067 *
18. Broadening knowledge about new products	0.165 ***	–0.323 ***	0.122 ***	0.129 ***
19. Distrust of new products	–	0.286 ***	–0.148 ***	–0.176 ***
20. Late acceptance of product innovations	–	0.329 ***	–0.187 ***	–0.174 ***

1	2	3	4	5
21. Seeking and collecting information about new products	0.116 *	-0.196 ***	0.097 **	0.120 ***
22. Encouraging the environment to use new products	0.137 **	-0.263 ***	0.127 ***	0.128 ***
23. Regularly purchasing new products	—	-0.240 ***	0.152 ***	0.184 ***

Correlations' significance level: * <0.05; ** <0.01; *** <0.001; (—) not statistically significant results.

Source: own research.

The obtained results (Table 2) allow to indicate the regularity according to which negative correlations between consumer innovativeness and age always coexist with positive correlations between consumer innovativeness and the level of education or material status, and vice versa. This allows for the identification of two basic dimensions of consumer innovativeness, i.e. pro-innovative and orthodox (Table 3).

Table 3. Basic dimensions of consumer innovativeness

Pro-innovative dimension (pro-innovative consumer)	Orthodox dimension (orthodox consumer)
01. Seeking information and testing new products immediately	02. Use of new products after verification by the environment
03. Taking risks associated with new products	04. Expecting support from the environment in using new products
05. Passive opinions on new products for the environment	06. Use of tested products
07. Verifying new products earlier compared to the environment	08. Leaving the verification of new products to the environment
09. Attitude of the leader of product innovation verification	13. Occurrence of barriers related to the use of new products
10. Testing new products	17. Use of proven market solutions
11. Quick adaptation of new products	19. Distrust of new products
12. Active opinions on new products in the environment	20. Late acceptance of product innovations
14. Interest in technological innovations	
15. Adaptation of market novelties	
16. Searching for new market solutions	
18. Broadening knowledge about new products	
21. Seeking and collecting information about new products	
22. Encouraging the environment to use new products	
23. Regularly purchasing new products	

Source: own research.

In the case of pro-innovative consumers, the correlations indicate the presence of negative relationships between consumer innovativeness and age, and the existence of positive

relationships between consumer innovativeness and the level of wealth or education. In the case of orthodox consumers, the correlations are opposite. At this point, attention should be paid to the negative correlations with age in case of pro-innovative consumers, which most likely result from the current generational change, and thus the presence of people whose education and broadly understood development took place in the analogue era. The results support H1, which stated that there is a directly proportional relationship between consumer innovativeness and education or material status and an inversely proportional relationship between consumer innovativeness and age in the pro-innovative dimension.

The main purpose of the study was to recognize the relationship between consumer innovativeness of the inhabitants of the Poznań agglomeration and their personal characteristics, i.e. gender, age, level of education and material situation. In the research process the Mann-Whitney U test and the Kruskal-Wallis test were used. The obtained results allowed the identification of statistically significant differences in the consumer innovativeness of the respondents. The following tables only present the results of tests showing statistically significant differences between the mean ranks and only the results showing statistically significant differences were discussed.

The first step in the research procedure was to compare the consumer innovativeness of the Poznań agglomeration residents according to their gender (Table 4).

Table 4. Comparison of consumer innovativeness of the inhabitants of the Poznań agglomeration according to their gender

Consumer innovativeness variables	Gender		
	mean rank		pairwise comparison – Mann-Whitney U test
	female	male	
1	2	3	4
01. Seeking information and testing new products immediately	386.61	412.26	–
02. Use of new products after verification by the environment	411.63	380.93	71,986.50 *
03. Taking risks associated with new products	385.72	413.38	–
04. Expecting support from the environment in using new products	417.22	369.27	67,818.00 **
05. Passive opinions on new products for the environment	379.52	419.96	69,907.00 *
06. Use of tested products	406.27	387.64	–
07. Verifying new products earlier compared to the environment	379.86	420.71	69,995.50 *
08. Leaving verification of new products to the environment	416.44	374.91	69,863.00 **
09. Attitude of the leader of product innovation verification	382.73	417.12	71,264.00 *

1	2	3	4
10. Testing new products	384.61	414.77	—
11. Quick adaptation of new products	370.26	431.53	65,824.00 ***
12. Active opinions on new products in the environment	379.38	416.84	69,906.00 *
13. Occurrence of barriers related to the use of new products	417.89	373.09	69,221.00 **
14. Interest in technological innovations	368.06	435.48	64,781.50 ***
15. Adaptation of market novelties	386.20	410.46	—
16. Searching for new market solutions	394.76	397.55	—
17. Use of proven market solutions	403.12	390.44	—
18. Broadening knowledge about new products	369.28	432.75	65 392.50 ***
19. Distrust of new products	405.16	385.62	—
20. Late acceptance of product innovations	406.82	385.86	—
21. Seeking and collecting information about new products	387.43	411.23	—
22. Encouraging the environment to use new products	378.72	422.14	69,491.50 **
23. Regularly purchasing new products	383.10	408.69	—

Significance level of the Mann-Whitney U test: * <0.05; ** <0.01; *** <0.001; (—) not statistically significant results.

Source: own research.

In the group of women (compared to men), consumer innovativeness is more related to the use of new products prevailing after the prior verification of these solutions by the environment (02, 08), expectation of support from other people (04) and barriers regarding the use of new products (13). In turn, in the case of men, attention should be paid to the presence of passive (05) and active (12) opinions on product innovations and help concerning the environment (07) in using them, which is associated with the attitude of the leader verifying product innovations (09), fast adaptation of new products (11), interest in technological innovations (14), obtaining information about new products (18) and encouraging the environment to use new products (22).

Then, the consumer innovativeness of the Poznań agglomeration residents was compared according to their age (Table 5).

The obtained results indicate the presence of statistically significant differences in all consumer innovativeness variables between the groups of the youngest (<29) and the oldest (50+) respondents and between the groups of the middle-aged (30–49) and the oldest (50+) respondents. There are definitely less statistically significant differences between the youngest (<29) and the middle-aged groups of respondents (30–49) – although these differences occur both in the case of pro-innovative consumers (05, 11, 12, 18) and orthodox consumers (02, 04). It should also be noted that the Kruskal-Wallis test results were always positive in the case

Table 5. Comparison of consumer innovativeness of the inhabitants of the Poznań agglomeration according to their age

Consumer innovativeness variables	Age					
	mean rank			pairwise comparison – Kruskal-Wallis test		
	<29	30–49	50+	<29 vs. 30–49	30–49 vs. 50+	<29 vs. 50+
01. Seeking information and testing new products immediately	465.93	465.46	321.09	–	144.369 ***	144.843 ***
02. Use of new products after verification by the environment	315.36	392.13	437.90	–76.771 ***	–45.768 **	–122.539 ***
03. Taking risks associated with new products	482.79	465.52	313.75	–	151.770 ***	169.043 ***
04. Expecting support from the environment in using new products	268.99	341.47	489.19	–72.482 ***	–147.718 ***	–220.200 ***
05. Passive opinions on new products for the environment	546.47	459.70	289.39	86.763 ***	170.317 ***	257.080 ***
06. Use of tested products	333.90	356.56	454.92	–	–98.360 ***	–121.024 ***
07. Verifying new products earlier compared to the environment	496.71	458.31	312.80	–	145.513 ***	183.911 ***
08. Leaving the verification of new products to the environment	323.82	351.63	462.76	–	–111.134 ***	–138.944 ***
09. Attitude of the leader of product innovation verification	468.11	474.04	314.10	–	159.939 ***	154.011 ***
10. Testing new products	479.22	465.98	314.97	–	151.020 ***	164.259 ***
11. Quick adaptation of new products	557.46	472.57	275.83	84.891 ***	196.739 ***	281.630 ***
12. Active opinions on new products in the environment	511.76	440.38	314.97	71.382 ***	125.408 ***	196.789 ***
13. Occurrence of barriers related to the use of new products	313.84	337.44	477.07	–	–139.629 ***	–163.235 ***
14. Interest in technological innovations	498.79	457.90	312.19	–	145.707 ***	186.597 ***
15. Adaptation of market novelties	495.21	451.14	315.93	–	135.212 ***	179.287 ***
16. Searching for new market solutions	487.61	443.76	321.92	–	121.839 ***	165.693 ***
17. Use of proven market solutions	336.87	354.61	453.83	–	–99.216 ***	–116.957 ***
18. Broadening knowledge about new products	512.86	450.65	310.45	62.202 **	140.207 ***	202.409 ***
19. Distrust of new products	321.11	332.46	474.48	–	–142.017 ***	–153.370 ***
20. Late acceptance of product innovations	291.34	337.87	485.68	–	–147.814 ***	–194.343 ***
21. Seeking and collecting information about new products	447.13	446.38	342.67	–	103.709 ***	104.461 ***
22. Encouraging the environment to use new products	474.34	459.71	321.5	–	138.213 ***	152.837 ***
23. Regularly purchasing new products	449.81	458.42	325.29	–	133.130 ***	124.519 ***

Significance level of the Kruskal-Wallis test: * <0.05; ** <0.01; *** <0.001; (–) not statistically significant results.

Source: own research.

of pro-innovative consumers and negative in the case of orthodox consumers. In conclusion, it should be stated that the intensity of pro-innovative dimensions of consumer innovativeness is the highest in the groups of the youngest (<29) and middle-aged (30–49) people, while the intensity of orthodox dimensions of consumer innovativeness is highest in the group of the oldest (50+) people. The results partly support H2, which stated that there are statistically significant differences in consumer innovativeness across all age groups.

The third step of the research procedure was to analyze consumer innovativeness according to the level of education of the respondents (Table 6).

Table 6. Comparison of consumer innovativeness of the inhabitants of the Poznań agglomeration according to their level of education

Consumer innovativeness variables	Level of education					
	mean rank			pairwise comparison – Kruskal-Wallis test		
	P/V	S	H	P/V vs. S	P/V vs. H	S vs. H
1	2	3	4	5	6	7
01. Seeking information and testing new products immediately	328.26	399.08	415.82	-70.815 **	-87.560 ***	–
02. Use of new products after verification by the environment	408.65	405.63	368.46	–	–	–
03. Taking risks associated with new products	306.72	410.04	415.59	-103.320 ***	-108.871 ***	–
04. Expecting support from the environment in using new products	491.58	387.04	341.58	104.547 ***	150.457 ***	45.457 *
05. Passive opinions on new products for the environment	302.57	414.99	411.49	-112.420 ***	-108.923 ***	–
06. Use of tested products	438.46	398.89	360.21	–	78.246 ***	–
07. Verifying new products earlier compared to the environment	306.02	404.52	421.56	-98.494 ***	-115.542 ***	–
08. Leaving the verification of new products to the environment	464.7	392.80	353.10	71.897 ***	111.597 ***	–
09. Attitude of the leader of product innovation verification	309.63	411.27	412.88	-101.636 ***	-103.247 ***	–
10. Testing new products	310.20	394.76	429.36	-84.561 ***	-119.159 ***	–
11. Quick adaptation of new products	262.94	424.89	421.51	-161.949 ***	-158.572 ***	–
12. Active opinions on new products in the environment	300.84	413.74	409.71	-112.905 ***	-108.871 ***	–
13. Occurrence of barriers related to the use of new products	456.34	400.14	349.88	56.193 *	106.459 ***	50.265 *
14. Interest in technological innovations	281.19	424.72	413.61	-143.525 ***	-132.415 ***	–
15. Adaptation of market novelties	281.82	411.64	424.24	-129.823 ***	-142.426 ***	–

1	2	3	4	5	6	7
16. Searching for new market solutions	296.17	408.67	417.20	-112.499 ***	-121.031 ***	—
17. Use of proven market solutions	470.34	391.76	350.05	78.578 ***	120.288 ***	47.710 *
18. Broadening knowledge about new products	298.25	419.09	409.53	-120.842 ***	-111.281 ***	—
19. Distrust of new products	462.48	388.65	354.43	73.828 **	108.054 ***	—
20. Late acceptance of product innovations	486.30	388.95	344.67	97.347 ***	141.633 ***	44.286 *
21. Seeking and collecting information about new products	308.23	421.66	403.02	-113.428 ***	-94.792 ***	—
22. Encouraging the environment to use new products	298.30	418.74	411.02	-120.439 ***	-112.717 ***	—
23. Regularly purchasing new products	301.52	399.16	420.53	-97.648 ***	-119.015 ***	—

‘P’ primary school; ‘V’ vocational school; ‘S’ secondary school; ‘H’ higher education.

Significance level of the Kruskal-Wallis test: * <0.05; ** <0.01; *** <0.001; (—) not statistically significant results.

Source: own research.

The analysis of the obtained results shows the highest number of statistically significant differences in consumer innovativeness variables between people with higher education and people with primary/vocational education, and between people with secondary education and people with primary/vocational education. What is interesting, the remaining comparisons (secondary vs. higher education) allowed for the identification of single differences, the role of which is rather secondary. The explanation of the occurrence of such a small number of statistically significant differences between people with secondary and higher education requires in-depth research. One of the reasons for this may be the increase in innovative requirements both in private and professional life. The results partly support H3, that stated that there are statistically significant differences in consumer innovativeness between all groups with different levels of education. In conclusion, it should be stated that the pro-innovative dimension of consumer innovativeness is highest in those groups of people with secondary or higher education, while the intensity of the orthodox dimension is highest in the group of people with primary/vocational education.

The last area of the analysis was to compare consumer innovativeness of the inhabitants of the Poznań agglomeration according to their material status (Table 7).

Table 7. Comparison of attitudes of the inhabitants of the Poznań agglomeration according to their material status

Consumer innovativeness variables	Material status					
	mean rank			pairwise comparison – Kruskal-Wallis test		
	<	nat. av.	>	< vs. nat. av.	nat. av. vs. >	< vs. >
01. Seeking information and testing new products immediately	331.31	366.60	434.36	–	–67.762 ***	–103.058 ***
02. Use of new products after verification by the environment	430.94	388.28	376.09	–	–	54.847 *
03. Taking risks associated with new products	336.12	359.36	438.51	–	–79.149 ***	–102.386 ***
04. Expecting support from the environment in using new products	464.59	391.31	356.48	73.278 ***	–	108.110 ***
05. Passive opinions on new products for the environment	330.43	372.47	428.50	–	–56.031 ***	–98.070 ***
06. Use of tested products	421.23	403.68	367.08	–	–	54.147 *
07. Verifying new products earlier compared to the environment	333.65	365.71	434.18	–	–68.468 ***	–100.529 ***
08. Leaving the verification of new products to the environment	441.38	400.16	361.92	–	–	79.456 ***
09. Attitude of the leader of product innovation verification	352.37	360.97	430.62	–	–69.653 ***	–78.253 ***
10. Testing new products	341.14	362.68	433.70	–	–71.015 ***	–92.559 ***
11. Quick adaptation of new products	307.62	359.08	449.26	–	–90.181 ***	–141.636 ***
12. Active opinions on new products in the environment	327.51	371.81	427.04	–	–55.236 ***	–99.531 ***
13. Occurrence of barriers related to the use of new products	465.29	420.52	335.22	–	85.296 ***	130.062 ***
14. Interest in technological innovations	320.08	370.76	435.39	–	–64.626 ***	–115.307 ***
15. Adaptation of market novelties	331.94	357.70	439.39	–	–81.685 ***	–107.445 ***
16. Searching for new market solutions	318.79	370.39	431.56	–	–61.169 ***	–112.768 ***
17. Use of proven market solutions	420.21	395.46	373.28	–	–	–
18. Broadening knowledge about new products	343.27	371.51	424.26	–	–52.743 **	–80.986 ***
19. Distrust of new products	463.36	410.53	340.81	–	69.720 ***	122.549 ***
20. Late acceptance of product innovations	486.40	397.59	344.87	88.818 ***	52.712 **	141.530 ***
21. Seeking and collecting information about new products	345.14	371.77	424.47	–	–52.698 **	–79.331 ***
22. Encouraging the environment to use new products	337.39	371.19	428.07	–	–56.877 ***	–90.675 ***
23. Regularly purchasing new products	325.06	356.08	436.89	–	–80.807 ***	–111.823 ***

‘<’ below national average ‘nat. av.’ national average; ‘>’ above national average.

Significance level of the Kruskal-Wallis test: * <0.05; ** <0.01; *** <0.001; (–) not statistically significant results.

Source: own research.

The most statistically significant differences were identified between consumers with material status above the national average and consumers with material status below the national average, and between persons with material status above the national average and consumers with material status at the level of the national average. On the other hand, statistically significant differences between consumers with material status below the national average and consumers with material status at the level of the national average are incidental. The results partly support H4 which stated that there are statistically significant differences in consumer innovativeness between all groups with different levels of material status. Consumer innovativeness is the highest in the group of the wealthiest respondents.

Conclusions, Limitations and Future Research

Summing up the results of the study is ambiguous. Only one hypothesis has been verified positively (H1) and three have been partly verified (H2, H3 and H4). It is necessary to indicate between which groups of respondents there are the most differences in consumer innovativeness (comp. Table 8):

- by age between the elderly (50+) and middle-aged (30–49) or youngest (<29) people,
- due to the level of education between people with primary/vocational education and people with secondary or higher education,
- due to the family's material status between people with a material status above the national average and people with a material status below the national average or people with material status at the level of the national average.

Table 8. The number of statistically significant differences in consumer innovativeness variables of the inhabitants of the Poznań agglomeration

Number of statistically significant differences	Gender	Age			Level of education			Material status		
	F vs. M	<29 vs. 30–49	30–49 vs. 50+	<29 vs. 50+	P/V vs. S	P/V vs. H	S vs. H	< vs. nat. av.	nat. av. vs. >	< vs. >
Consumer innovativeness	12/23 52,2%	6/23 26,1%	23/23 100%	23/23 100%	21/23 91,3%	22/23 95,7%	4/23 17,4%	2/23 8,7%	18/23 78,3%	22/23 95,7%

Gender: 'F' Female; 'M' Male.

Level of education: 'P' primary school; 'V' vocational school; 'S' secondary school; 'H' high school.

Material status: '<' below national average 'nat. av.' national average; '>' above national average.

Source: own research.

Due to the spatial and subjective scope of the research, its results can only be referred to the adult inhabitants of the Poznań agglomeration. It is necessary to point out the need for

additional analyzes, the objectives of which will focus on the search for latent relations between the studied variables and relationships that allow segmentation of the studied population according to consumer innovativeness. At the same time, attention should be paid to the high dynamics of the development of consumer innovativeness, which requires monitoring during subsequent empirical research.

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