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The Impact of Moderators and Trust on Consumer's Intention to Use a Mobile Phone for Purchases

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Abstract

Purpose: This paper examines the consumers' acceptance and usage of technology, which is an important and widely discussed topic. The aim is to explore the impact of moderators (gender, age, experience in using mobile Internet technologies) and *trust* towards one's *intention to use a mobile phone for purchases (to acquire goods).*

Methodology: Empirical research was conducted among Warsaw students with the use of the UTAUT2 model (Unified Theory of Acceptance and Use of Technology), extended so as to encompass the concept of *trust*. Data was analysed using partial least squares path modelling (PLS-SEM) and the SmartPLS 3 programme. The multi-group analysis was employed (PLS-MGA) to measure the impact of moderating variables.

Findings: Research results indicate that *trust has no significant impact on one's intention to use a mobile phone for purchases*. Gender is an important moderator of the relationship between the independent variable of *price value* and the independent variable of *habit* with the dependent variable of *the intention to use a mobile phone for purchases*. Age is an important moderator in the relationship between the independent variable of *hedonic motivation* and the independent variable of *habit* with the dependent variable of *the intention to use a mobile phone for purchases*. Experience is not an important moderator of any relationship specified in the hypotheses.

Keywords: UTAUT2, mobile shopping, technology acceptance models, consumer behaviour, mobile technologies, m-commerce, trust

JEL: D11, D12, O14

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Introduction

According to current estimates, approximately 64% of Poles are smartphone users (mobile phones equipped with the functions of a portable computer, including Internet access), which means that nearly 21 million such devices are owned by consumers over 15 years of age in Poland (Mikowska, 2015). They may be used for shopping, i.e. ordering, making payments, searching for information and accessing product reviews, comparing offers and product prices. It is estimated that in 2015, the value of the Polish m-commerce market approached PLN 2.5 billion, accounting for approximately 7–8% of total online trade (mGenerator.pl, 2014). Each year, several hundred articles and papers on m-commerce are published globally (Scopus base), witness to the tremendous interest generated by this subject matter throughout the world. As noted by Mącik (2013), studies on the impact of the Internet on consumer behaviour are scarce in contemporary Polish literature. The majority of the existing studies have been carried out on behalf of commercial entities and few academic papers pertaining to this subject have been published.

Literature review

Technology acceptance models

One of the issues most often discussed in the contemporary literature pertaining to ICT systems is the acceptance and usage of technology by consumers (Hu et al., 1999). Indrawati and Marhaeni (2015) cite ten models that are typically analysed by researchers in this context:

(1) Theory of Reasoned Action (TRA) posits that consumers are rational decision makers. Although this is not a technology acceptance model in concept, it is regarded as one of the first and most important theories pertaining to technology acceptance (Trojanowski and Kułak, 2016). The key assumption for this model is the direct influence that one's intention has on actual behavior. The main predictors of intention are attitude toward behaviour ("an individual's positive or negative feelings about performing target behavior" (Fishbein and Ajzen, 1975, p. 216)) and subjective norms ("The person's perception that most people who are important to him, think he should or should not perform the behavior in question" (Fishbein and Ajzen, 1975, p. 302)).

(2) Theory of Planned Behaviour (TPB) was formulated by Ajzen (1991) as an extension of TRA. The aim of this extension was to take into account mandatory situations (e.g. in work). A key variable added to the model was perceived

behavioural control ("The perceived ease or difficulty of performing the behavior" (Ajzen, 1991, p. 188)).

(3) The Technology Acceptance Model (TAM) is the most cited model in the technology acceptance field (according to Scopus). It is an adaptation of TRA to the information systems context – a parsimonious, yet very efficient theory (Venkatesh and Davis, 2000). Behavioural intention to use is antecedent of actual system use. Independent constructs predicting intention are perceived usefulness ("the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1986, p. 26)) and perceived ease of use ("the degree to which a person believes that using a particular system would be free from effort" (Davis, 1986, p. 26)).

(4) The Motivational Model (MM) was proposed by Davis et al. (1992) to address the question of whether people "use computers at work more because they are useful or because they are enjoyable to use" (Davis et al., 1992, p. 1111). With MM, the authors adjusted motivational theories to the technology acceptance and usage field focusing on extrinsic and intrinsic motivations that constitutes an individual's behaviour. Extrinsic motivation is defined as performing an activity "because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions" (Davis et al., p. 1112), intrinsic motivation is defined as performing an activity "for no apparent reinforcement other than the process of performing the activity per se" (Davis et al., p. 1112).

(5) The Combined Technology Acceptance Model and Theory of Planned Behaviour (C-TAM-TPB) – Taylor and Todd (1995) incorporated social (subjective norms) and control (perceived behavioural control) factors from TPB into TAM to predict behaviour of both experienced and inexperienced users of new technology.

(6) The Model of Personal Computer Utilisation (MPCU) was formulated by Thompson et al. (1991) as a counterweight for using TRA for technology acceptance research. It was based on Triandis Interpersonal Behavior Model (1980). Determinants of PC Utilization in this model are job-fit ("The extent to which an individual believes that using [a technology] can enhance the performance of his or her job" (Thompson et al., 1991, p. 129)), affect towards use ("Feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act" (Thompson et al., 1991, p. 127)), facilitating conditions ("Provision of support for users of PCs may be one type of facilitating condition that can influence system utilization" (Thompson et al., 1991, p. 129)), complexity ("The degree to which an innovation is perceived as relatively difficult to understand and use" (Thompson et al., 1991, p. 128)), long-term consequences ("Outcomes that have a pay-off in the future" (Thompson

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et al., 1991, p. 129)) and social factors ("Individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations" (Thompson et al., 1991, p. 126)).

(7) Innovation Diffusion Theory (IDT) – the aim of this theory is to explain why, how and how fast new ideas diffuse in society. The author of this theory is Rogers (1983), who suggested, that adoption is predicted by relative advantage, compatibility, complexity, trialability and observability. The theory was further expanded by Moore and Benbasat (1991), by adding new constructs and adjusting the model to the technology acceptance context. In this model the rate of adoption is explained by relative advantage ("The degree to which an innovation is perceived as being better than its precursor" (Moore and Benbasat, p. 195)), compatibility ("The degree to which an innovation is perceived as being consistent with the existing values, needs and past experiences of potential adopters" (Moore and Benbasat, 1991, p. 195)), image ("The degree to which use of an innovation is perceived to enhance one's image or status in one's social system" (Moore and Benbasat, 1991, p. 195)), voluntariness of use ("The degree to which use of the innovation is perceived as being voluntary, or of free will (Moore and Benbasat, 1991, p. 195)), results demonstrability ("The tangibility of the results of using the innovation, including their observability and communicability" (Moore and Benbasat, 1991, p. 203)), visibility ("The degree to which one can see others using the system in organization" (Moore and Benbasat, 1991, p. 195)) and ease of use ("The degree to which an innovation is perceived as being difficult to use" (Moore and Benbasat, 1991, p. 195)).

(8) Social Cognitive Theory (SCT) proposed by Bandura (1986) posits, that human behaviour can be defined as the interaction between the environment, personal factors and behaviour. Compeau and Higgins (1995), who adjusted the theory to computer usage context, denoted five antecedents of technology usage namely outcome expectations – performance ("The performance-related consequences of the behavior. Specifically, performance expectations deal with job-related outcomes" (Venkatesh et al., 2003, p. 432)), outcome expectations – personal ("The personal consequences of the behavior. Specifically, personal expectations deal with the individual esteem and sense of accomplishment" (Venkatesh et al., 2003, p. 432)), self-efficacy ("Judgement of one's ability to use a technology (e.g. computer) to accomplish a particular job or task" (Venkatesh et al., 2003, p. 432)), affect ("An individual liking for particular behavior (e.g. computer use)" (Venkatesh et al., 2003, p. 432)) andanxiety ("Evoking anxious or emotional reactions when it comes to performing behavior (e.g. using a computer)" (Venkatesh et al., 2003, p. 432)).

(9) The Unified Theory of Acceptance and Use of Technology (UTAUT) encompasses elements of TRA, TPB, TAM, MM, C-TAM-TPB, MPCU, IDT and SCT models, singled out in the course of longitudinal studies conducted in four organizations (Venkatesh et al., 2003). This theory was created because technology acceptance researchers were "confronted with a choice among a multitude of models and find that they must "pick and choose" constructs across the models, or choose a "favoured model" and largely ignore the contributions from alternative models" (Venkatesh et al., 2003, p. 426). The *intention* to use technology and its actual use are accounted for in the UTAUT model by *performance expectancy* ("The degree to which the user expects that using the system will help him or her attain gains in job performance" (Venkatesh et al., 2003, p. 447)), *effort expectancy* ("The degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450)), *social influence* ("The degree to which an individual perceives that important others believe that he or she should use the new system" (Venkatesh et al., 2003, p. 451)) *and facilitating conditions* ("The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh et al., 2003, p. 453)). Over time UTAUT has been used as a baseline model for both organizational and non-organizational research including a variety of technologies, however it was designed from "an internal perspective of the organization. [...] For this reason the constructs which form it have a distinctly utilitarian character" (Rondan-Cataluna et al., 2015, p. 795).

(10) The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2 – presented in Figure 1) is based on the UTAUT model. In the UTAUT2 model, UTAUT variables are supplemented with hedonic motivation ("The fun or pleasure derived from using a technology" (Venkatesh, et al., 2012, p. 161)), price value ("The consumers' cognitive trade-off between the perceived benefits and the monetary cost of behavior" (Venkatesh et al., 2012, p. 161)) and habit ("The extent to which people tend to perform behaviours automatically because of learning" (Venkatesh et al., 2012, p. 161)). This is done in order to better adjust the model to the consumer context (Venkatesh et al., 2012). Age, gender and experience are the moderating variables in the UTAUT2 model.

The UTAUT2 model has many advantages in comparison to other technology acceptance models. With the inclusion of variables such as hedonic motivation and habit, unlike TRA and TPB, UTAUT2 is not "failing to take into account emotions, compulsions, and other noncognitive or irrational determinants of human behavior" (Fishbein 2008, p. 835). UTAUT2 is a complex model with many constructs and variables and is therefore not perceived to be trivial, limited in explanatory and predictive power,

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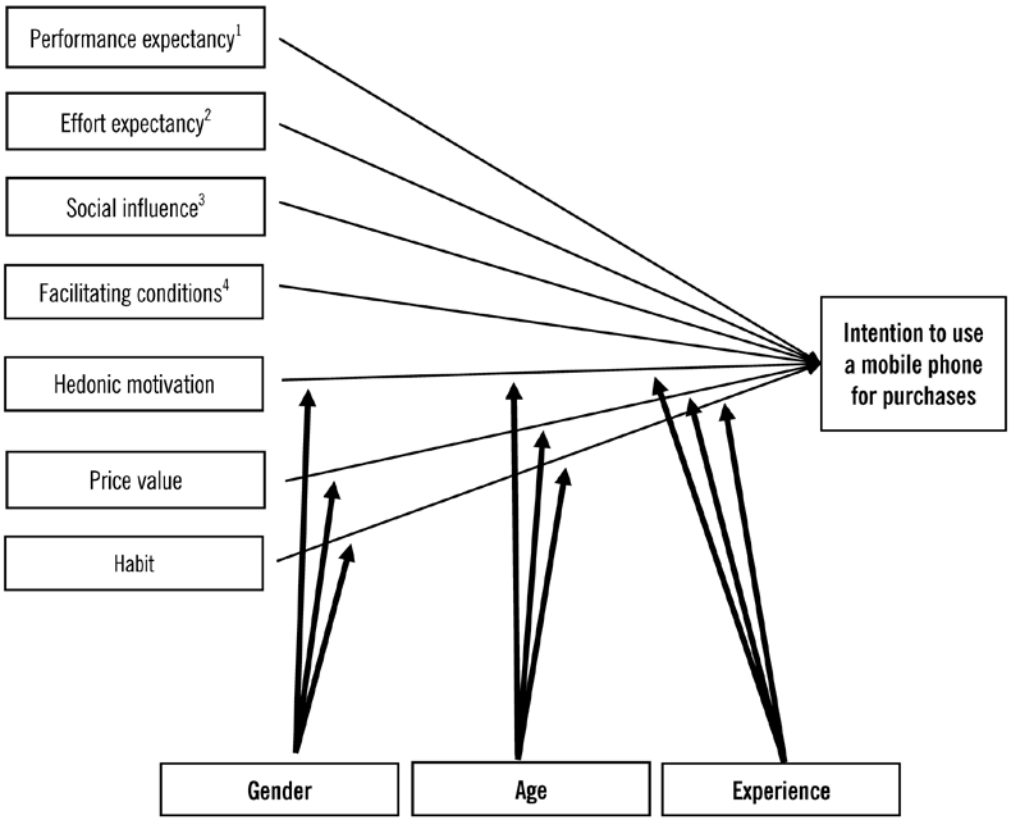
or to have questionable heuristic value and lacking any practical value as TAM (Chuttur, 2009). However, it is worth pointing out that some researchers (Falk and Miller, 1992; Bagozzi, 1992) suggest that parsimonious models may produce better results, are easier to understand and do not include excessive variables and constructs, which may be perceived to some degree as a UTAUT2 disadvantage. UTAUT2 is unified theory, which is not the case with social-cognitive theory in which "different aspects [...] do not tie together to create a cohesive explanation of behavior (Boundless Psychology, 2016). What is most important is that the UTAUT2 model explains to the greatest extent the divergence between the *intention to use* and the *actual use* of technology by consumers. Due to the above advantages, UTAUT2 was chosen as a theoretical basis for this research. Over the past few years, the UTAUT2 model has been extended to include a number of different constructs, such as achievement (Xu, 2014), perceived risk (Trojanowski and Kułak, 2016) and trust (Alazzam et al., 2016).

Figure 1. UTAUT2 model



Source: Venkatesh et al. (2012).

Hypotheses and the research model

Trust

Trust in research has been operationalized in a variety of manners. Gefen et al. (2003) identify four basic types of *trust* operationalization: (1) general belief that one's business partner can be trusted in the context of the transaction, (2) the seller's endeavours to ensure that the consumer feels safe and secure during the transaction, (3) the consumer's opinion about the specific seller, regarding the latter's integrity, benevolence and ability, (4) a combination of the above factors. The same applies to the process of selling products online. For these studies trust has been defined as confidence about the goodwill and behavior of another (Hart and Saunders, 1997) and it has been measured with seven statements presented below which have been adapted from Gefen et al. (2003) and adjusted to the context of buying goods with a mobile phone:

TRU 1 Online vendors are generally honest
TRU 2 Online vendors generally know their market
TRU 3 Online vendors generally care about customers
TRU 4 Online vendors generally provide good customer service
TRU 5 Online vendors are generally trustworthy
TRU 6 Online vendors are not generally opportunistic
TRU 7 Online vendors are generally predictable

Numerous studies (Gefen et al., 2003; Gefen, 2000; McKnight et al., 2002; Kossecki and Świerczyńska-Kaczor, 2011) have proven that *trust* is equally relevant, in explaining one's *intention* to purchase an item, as other variables present in different technology acceptance models. Constraints associated with using a phone to shop include: a small screen and difficulty in displaying multimedia (Chae and Kim, 2003), the absence of mobile versions of websites and of a single standard for making payments using mobile devices, as well as low awareness levels of some consumers regarding the use of mobile phones as shopping devices. These all thwart the process of building consumer confidence in m-commerce. The following hypothesis is thus formulated:

H1. *Trust* positively influences one's *intention to use a mobile phone for purchases*.

Moderating variables

The majority of cause and effect relationships advanced by researchers in their structural models only take into account the direct impact of exogenous variables on endog-

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enous variables. The impact of moderating variables on relationships between them is often discarded. In many cases, however, this assumption proves wrong. Groups of respondents are likely to diverge significantly from each other in terms of their beliefs, values or their understanding of different constructs; therefore, the value of path coefficients for each group may be different. Failure to examine the impact of heterogeneity may result in drawing incorrect conclusions and formulating invalid recommendations (Hair et al., 2012).

In the majority of studies based on the UTAUT and UTAUT2 models, the effect of moderators is either not examined at all, or only some of the moderators proposed by Venkatesh et al. (2012; Wong et al., 2014; Gaitan-Arenas et al., 2015) are taken into account. In the study carried out by Venkatesh and his team (2012), the impact of moderating variables, such as age, gender and experience, is examined in eight different relationships. In this study, we shall look into the impact of these moderators on relationships between independent variables, i.e. *hedonic motivation, habit and price value*, and the dependent variable, i.e. *one's intention to use a mobile phone for purchases*.

Venkatesh et al. (2012) found that the impact of *hedonic motivation* on one's intention to use this technology is moderated by *age, gender and experience, as users differ in terms of the way they search for information about products and adopt new technologies*. When shopping, women tend to be guided by impulses more often than men and they pay more attention to signals affecting their senses (Tifferet and Herstein, 2012). They derive greater pleasure from shopping and more often consider it as an enjoyable pastime (Kruger and Byker, 2009).

One may decide to use a technology or a product because it is innovative and comprises an element or aspect that has not been available thus far. This, in turn, boosts hedonic motivation (Holbrook and and Hirschman, 1982). Users pay a lot of attention to the novelty of a product. As their experience in using a particular product grows, the novelty effect and its impact on the product's attractiveness diminish. Users expect that the product will enable them to achieve a particular goal efficiently and effectively. Compared to younger people, older consumers are more focused on personal values and experience (Labouvie-Vief and Blanchard-Fields, 1982). Young men seem to have a greater tendency to seek innovation and newness (Chau & and Hui, 1998), which positively affects the hedonic motivation. *Gender* has also been used as a moderating variable in several studies pertaining to the use of technology (An et al., 2016; Venkatesh et al., 2000). The following hypotheses are formulated:

H2a. The *gender* variable moderates the relationship between the *hedonic motivation* and *the intention to use a mobile phone for purchases*.

H2b. The *age* variable moderates the relationship between the *hedonic motivation* and *the intention to use a mobile phone for purchases*.

H2c. The *experience* variable moderates the relationship between the *hedonic motivation* and *the intention to use a mobile phone for purchases*.

The results of empirical research suggest that men are more task-oriented than women (Cruz et al., 2010). According to research (Seock and Bailey, 2008), men shop on the Internet more often than women and, on average, spend more money on goods purchased online. Women, in turn, tend to focus more on the purchasing process itself (Venkatesh et al., 2000), are more involved, pay more attention to the prices of products and services and are more aware of the cost involved in acquiring them. Therefore, they are generally more cautious and act more responsibly when spending money (Slama and Tashchian, 1985). Their sensitivity to price increases with age, which can be accounted for by the social role of older women, i.e. controlling family expenses and caring for the financial security of family members (Venkatesh et al., 2012). Older consumers are less aware of the available sources of price information and find it harder to use and memorize information related to product prices (Zeithaml and Fuerst, 1983). The following hypotheses are formulated on the basis of the above:

H3a. The *gender* variable moderates the relationship between *price value* and *the intention to use a mobile phone for purchases*.

H3b. The *age* variable moderates the relationship between *price value* and *the intention to use a mobile phone for purchases*.

H3c. The *experience* variable moderates the relationship between *price value* and *the intention to use a mobile phone for purchases*.

According to Van Slyke et al. (2002), users with greater experience in using a particular technology are more likely to have recourse to it when shopping. They are also less willing to change their behaviour, and therefore habit tends to have a greater impact on their *intention* to purchase goods (Murray and Haubl, 2007). Age and gender are responsible for differences in the processing of information by consumers (the manner in which they absorb and process different stimuli), which in turn influences the impact of *habit* on their *intention* to shop. Research (Lustig et al., 2004) has shown

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that older people experience more difficulty in acquiring new skills. Once they have learnt to use technology in a specific way, it is harder for them to change their habits. They often rely on repetitive actions and revert to their habits more often than younger consumers. According to researchers (Meyers-Levy and Maheswaran, 1991), women pay more attention to details than men, who are more likely to act pursuant to a scheme they have adopted and ignore certain important aspects. Women are more sensitive to new stimuli and changes; and therefore, their purchasing *intention* is less affected by habit. The above considerations are translated into the following hypotheses:

H4a. The *gender* variable moderates the relationship between *habit* and *the intention to use a mobile phone for purchases*.

H4b. The *age* variable moderates the relationship between *habit* and *the intention to use a mobile phone for purchases*.

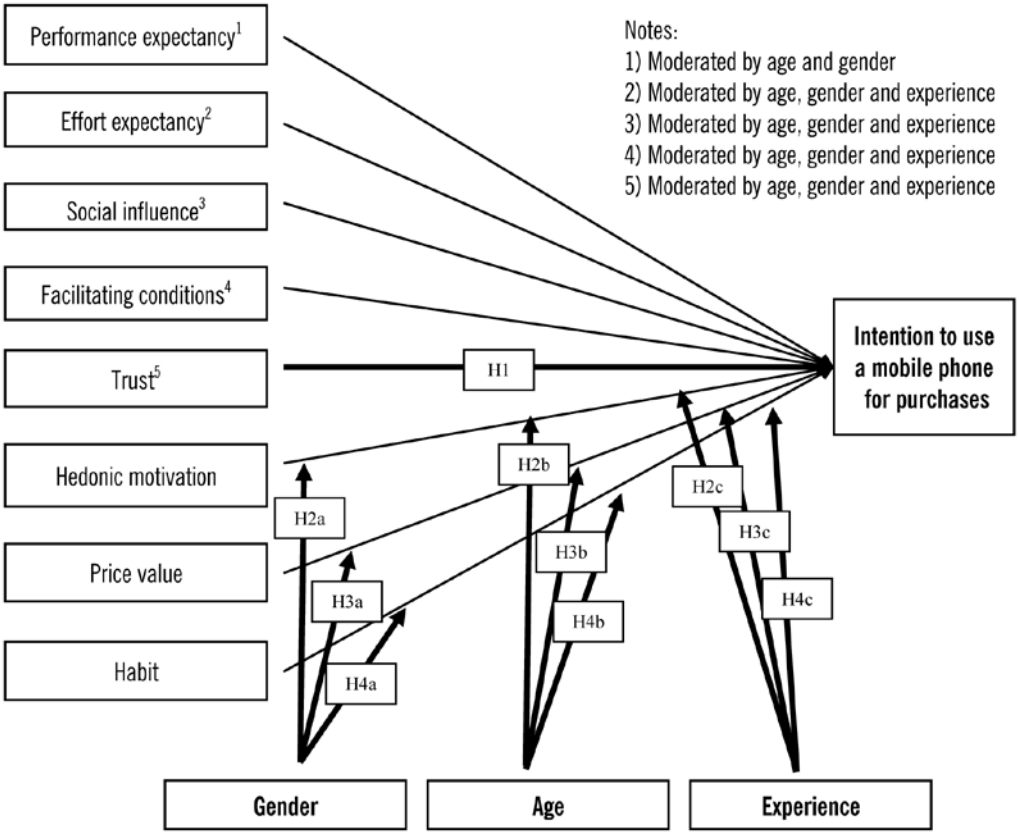
H4c. The *experience* variable moderates the relationship between *habit* and *the intention to use a mobile phone for purchases*.

Research model

Presented below are the variables included in the proposed research model (Figure 2). Their definitions are consistent with those presented by Venkatesh (Venkatesh et al., 2012; Venkatesh et al., 2003) and adapted to the context of shopping with the use of a mobile phone with Internet access. *Performance expectancy* (in some tables abbreviated to PERE) means the extent to which the use of a mobile phone in the process of buying products online benefits the consumer. *Effort expectancy* (EFFE) is the ease with which the user uses a mobile phone in the process of online shopping. *Social influence* (SI) denotes the consumers' conviction that their family or friends espouse the idea of them using a mobile phone for Internet shopping. *Facilitating conditions* (FC) refer to the assistance and support that consumers benefit from while making purchases online using a mobile phone. *Trust* (TRU) is defined in the section that deals with the study's hypotheses. *Hedonic motivation* (HM) means the pleasure derived by the consumer from online shopping using a mobile phone. *Price value* (PV) is the relationship between the benefits that the consumer enjoys in the process of purchasing goods on the Internet using a mobile phone, and the cost incurred. *Habit* (HAB) refers to the probability that the consumer uses a mobile phone for online shopping naturally, without giving it any further thought. Moderating variables are *gender, age* and *experience*. The endogenous variable is *the intention to use a mobile phone for purchases* (INT). The model aims to capture the attitude towards purchases

of different kinds of physical and digital goods (it was not designed to capture the attitude towards purchases of services).

Figure 2. Research model



Source: authors' own.

Methodology

Study participants

The respondents were selected among students (undergraduate, graduate and post-graduate) of Warsaw universities and colleges. To define a sample for the research, the data from part of the Social Diagnosis 2015 report (Batorski, 2015) dedicated to the use of technology and media in different groups in 2015 was used (included in Table 1). This data indicates, that by far the highest percent of people using the mobile internet

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are among the age groups: 16–24, 25–34 and 35–44 years. These are also the age groups with the highest share of students of undergraduate, graduate and postgraduate studies. In the other age groups (especially above 60 years of age) due to the small percentage of people using the mobile internet, *intention* to use a mobile phone for purchases would be difficult to observe. The age of the respondents from the sample is presented in Table 2. In order to participate in the survey, students had to use their mobile phones during at least one of the stages of the purchasing process. Due to a large number of missing responses (> 15%), three questionnaires were excluded from the analysis (Hair et al., 2014). The majority of respondents were women (> 70%) under 25 years of age (> 61%) who had been using mobile Internet for more than three years (> 69%). To perform the PLS-MGA analysis, the respondents were divided into 2 groups per moderator (Hair et al., 2014). The sample group is presented in Table 3.

Table 1. Mobile Internet usage in 2015

Metric	Age group	% of people using Internet on mobile devices
Age	**16–24**	**35,9%**
	25–34	**32,6%**
	35–44	**23,5%**
	45–59	8,7%
	60–64	5,0%
	> 65	1,2%

Source: Batorski, 2015.

Table 2. Age of the respondents from the sample

Metric	Age group	Numer of respondents
Age	**19–24**	**271**
	25–34	**93**
	35–44	**25**
	45–59	6
	60–64	0
	>65	0

Source: authors' own.

Table 3. Characteristics of the respondents from the sample

Total participants	Women	Men	No indication of gender	Experience <= 3 years	Experience > 3 years	Age < 25	Age >= 25	No indication of age
397	280	116	1	122	275	271	124	2
100%	70.5%	29.2%	0.3%	30.7%	69.3%	61.7%	37.8%	0.5%

Source: authors' own.

Questionnaire

The questionnaire consisted of 38 statements: *performance expectancy* (4 statements), *effort expectancy* (4 statements), *social influence* (3 statements), *facilitating conditions* (4 statements), *hedonic motivation* (3 statements), *price value* (3 statements) and *habit* (4 statements). They were based on the UTAUT/UTAUT2 model (Venkatesh et al., 2003; Venkatesh et al., 2012). *Trust* (7 statements) was adapted from Gefen et al. (2003). The six statements refer to the endogenous variable: *intention to use a mobile phone for purchases*. All the statements were examined using a 7-point Likert scale, with answers ranging from 1 (I strongly disagree) to 7 (I strongly agree). Paper questionnaires were used to collect data (PAPI technician).

Data analysis

Data analysis was performed using partial least squares path modelling (PLS-SEM). This method seems useful with respect to complex models encompassing numerous variables. It also minimizes the amount of unexplained variance (Hair et al., 2014) and has been used in a variety of research areas, including marketing (Henseler et al., 2009) and information systems (Chin et al., 2003). SmartPLS3 was resorted to for data analysis (Ringle et al., 2015).

Results

Measurement model analysis

Following Hulland's (1999) recommendation, the measurement model was evaluated during the first stage of result analysis and interpretation.

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Internal consistency

In order to achieve an internal cohesion, the composite reliability is verified in the PLS-SEM method. Its value for each of the constructs should be higher than 0.7 (Bagozzi and Yi, 1988), which was achieved in this study (Table 2).

Table 2. Composite reliability and Average Variance Extracted (AVE) values

	Composite reliability	AVE
EFFE	0.857	0.602
FC	0.775	0.535
HAB	0.860	0.607
HM	0.864	0.680
INT	0.871	0.530
PERE	0.819	0.601
PV	0.816	0.596
SI	0.846	0.649
TRU	0.855	0.596

Source: authors' own.

Convergent validity

Convergent validity is assessed through verifying the value of AVE and of outer loadings (Hair et al., 2014). AVE values should be greater than 0.5 (Bagozzi and Yi, 1988); all constructs in this study exceeded this threshold (Table 2). The value of outer loadings ought to be higher than 0.708 (Hair et al., 2014); should the value range between 0.4 and 0.7, statements must be deleted only if composite reliability and the value of AVE increase (Hair et al., 2014). Statements with outer loadings below 0.4 are to be removed (Hair et al., 2011). Taking into account the above guidelines, a number of statements were deleted, namely: *performance expectancy 4, facilitating conditions 4, trust 1, trust 2 and trust 6.*

Indicator reliability

All indicators within the model fulfilled the indicator reliability requirement formulated by Hulland (1999), in which the minimum reliability of an indicator is at 0.4.

Discriminant validity

Discriminant validity was evaluated with the Fornell-Larcker's criterion (Fornell and Larcker, 1981): the square root of the AVE of each construct should be greater than

the value of the construct's highest correlation with any other construct (Hair et al., 2014). The results of this test, confirming the discriminant validity, are presented in Table 3.

Table 3. Fornell-Larcker criterion

	EFFE	FC	HAB	HM	INT	PERE	PV	SI	TRU
EFFE	**0.776**								
FC	0.612	**0.732**							
HAB	0.476	0.377	**0.779**						
HM	0.523	0.379	0.657	**0.825**					
INT	0.453	0.461	0.580	0.581	**0.728**				
PERE	0.542	0.382	0.646	0.698	0.622	**0.775**			
PV	0.372	0.267	0.416	0.546	0.365	0.485	**0.772**		
SI	0.495	0.370	0.604	0.550	0.491	0.577	0.495	**0.805**	
TRU	0.360	0.367	0.260	0.308	0.291	0.313	0.357	0.387	**0.772**

Source: authors' own.

During the second stage of analysis and result interpretation, the structural model was assessed (Hulland, 1999).

Analysis of the structural model

Collinearity

Collinearity did not prove problematic for the study, as VIF values of specific constructs did not exceed 5 (Hair et al., 2011), as shown in Table 4.

Coefficient of determination R^2 and path coefficients

Independent variables (i.e. *performance expectancy, effort expectancy, facilitating conditions, social influence, habit, price value, hedonic motivation* and *trust*) account for 49.6% of the variance of the endogenous variable *intention to use a mobile phone for purchases*. The value of R^2 should therefore be assessed as being moderately high (Wong, 2013). The results of this study allow us to conclude that variables *performance expectancy* ($\beta = 0.298$, $p < 0.01$), *facilitating conditions* ($\beta = 0.221$, $p < 0.01$), *habit* ($\beta = 0.185$, $p < 0.01$) and *hedonic motivation* ($\beta = 0.167$, $p < 0.01$) have a significant impact on *one's intention to use a mobile phone for purchases*, while the remaining

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variables, i.e. *social influence* (β = 0.063, p> 0.1), *effort expectancy* (β = -0.047, p> 0.1), *price value* (β = -0.027, p> 0.1) and *trust* (β = 0.020, p> 0.1) are not statistically significant. Table 5. summarizes path coefficients.

Table 4. VIF values

	INT
EFFE	2.074
FC	1.685
HAB	2.243
HM	2.556
INT	
PERE	2.445
PV	1.607
SI	2.001
TRU	1.319

Source: authors' own.

Table 5. Assessment of path coefficients

	Path coefficient (O)	Mean (M)	Standard deviation (STDEV)	Statistics T (|O/STDEV|)	Value P
EFFE -> INT	-0.047	-0.049	0.054	0.883	0.377
FC -> INT	0.221	0.224	0.060	3.658	0.000
HAB -> INT	0.185	0.183	0.054	3.415	0.001
HM -> INT	0.167	0.165	0.058	2.872	0.004
PERE -> INT	0.298	0.299	0.056	5.311	0.000
PV -> INT	-0.027	-0.024	0.044	0.611	0.541
SI -> INT	0.063	0.063	0.053	1.182	0.237
TRU -> INT	0.020	0.023	0.040	0.494	0.621

Source: authors' own.

Analysis of moderating variables

The impact of moderating variables was subjected to a multi-group analysis (PLS-MGA), which is the most common type of analysis used to address differences between groups of respondents (Garson, 2016). The MICOM procedure was applied to assess measurement invariance (Henseler et al., 2016). The analysis of the impact of moderating variables and differences in terms of their impact are outlined in Table 6a and Table 6b. Analysis of the impact of moderating variables on *trust* will be presented in detail in a future article.

Table 6a. Analysis of the impact of moderating variables

Relationship	Gender		Age		Experience	
	W	M	<25 years	>=25 years	<=3 years	>3 years
HM → INT	β = 0.159**	β = 0.101	β = 0.240*	β = 0.049	β = 0.222*	β = 0.151**
PV → INT	β = -0.075	β = 0.088	β = -0.035	β = 0.060	β = -0.050	β = -0.019
HAB → INT	β = 0.101***	β = 0.295*	β = 0.132**	β = 0.317*	β = 0.186	β = 0.204*
R^2 (INT)	0.506	0.523	0.538	0.484	0.480	0.520

*p<0,01 **p<0,05 *** p<0,1

Source: authors' own.

Table 6b. Analysis of differences in terms of the impact of moderating variables

Relationship	Gender	Age	Experience
	|W–M|	|<25 years – >=25 years|	|<=3 years – >3 years|
HM → INT	0.058	0.191**	0.072
PV → INT	0.163**	0.095	0.031
HAB → INT	0.194***	0.185***	0.018

*p<0.01 **p<0.05 *** p<0.1

Source: authors' own.

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Discussion and implications

This article contributes to the technology acceptance research by adding *trust* to the UTAUT2 model. The research was conducted among Polish consumers, which differentiates this paper from other studies carried out mainly in the United States, Great Britain and Asian countries. The main purpose of this research was to examine the influence of *trust* on the *intention to use a mobile phone for purchases* and the effect of moderators namely *gender*, *age* and *experience* on the relationship of *hedonic motivation*, *price value* and *habit* with the *intention to use a mobile phone for purchases*. Hypotheses H3a, H4a, H2b and H4b have been confirmed in the study, as opposed to H1, H2a, H3b, H2c, H3c and H4c, which have not been validated. A summary of the hypotheses is presented in Table 7.

Table 7. Summary of the hypotheses

Hypothesis	Confirmed?
H1. *Trust* positively influences one's *intention to use a mobile phone for purchases*.	No
H2a. The *gender* variable moderates the relationship between the *hedonic motivation* and *the intention to use a mobile phone for purchases*.	No
H2b. The *age* variable moderates the relationship between the *hedonic motivation* and *the intention to use a mobile phone for purchases*.	Yes
H2c. The *experience* variable moderates the relationship between the *hedonic motivation* and *the intention to use a mobile phone for purchases*.	No
H3a. The *gender* variable moderates the relationship between *price value* and *the intention to use a mobile phone for purchases*.	Yes
H3b. The *age* variable moderates the relationship between *price value* and *the intention to use a mobile phone for purchases*.	No
H3c. The *experience* variable moderates the relationship between *price value* and *the intention to use a mobile phone for purchases*.	No
H4a. The *gender* variable moderates the relationship between *habit* and *the intention to use a mobile phone for purchases*.	Yes
H4b. The *age* variable moderates the relationship between *habit* and *the intention to use a mobile phone for purchases*.	Yes
H4c. The *experience* variable moderates the relationship between *habit* and *the intention to use a mobile phone for purchases*.	No

Source: authors' own.

Trust has not proven to be a predictor of the *intention to use a mobile phone for purchases*. This is contrary to the result of the research carried out by McKnight et al. (2002), according to which the consumer's trust in the online retailer had a significant, positive impact on his/her willingness to shop online. Consumers representing different cultures may, however, have different expectations, which determine the level of trust that a particular retailer inspires in them (Jarvenpaa et al., 1999). Polish customers are among those most accustomed to mobile banking in Europe. Over 50% of mobile Internet users in Poland access their bank accounts from a mobile device and nearly half of them use such devices for payments (Klimontowicz, 2014). The fact that *trust* does not translate into a greater *intention to use a mobile phone to make purchases* may be explained by the consumers' rapid adaptation and willingness to use technological innovations related to mobile payments. As *trust* has proven to be a significant predictor of *intention* in many studies (Gefen et al., 2003; Escobar-Rodríguez and Carvajal-Trujillo, 2014), it is worth checking whether the mediator variable intervenes between *trust* and *intention*. Other research (Pavlou, 2003; Slade et al., 2015) suggests, that the perceived risk may be the mediator for this relationship. Managers should not focus on emphasizing a company's honesty or great customer service. Rather they need to underline what benefits a consumer actually receives when buying a particular product (e.g. improved work efficiency).

The relationship between the *hedonic motivation* and the *intention* to use a phone for purchases is significant and is moderated by *age*. Younger people are more likely to expect shopping with the use of a mobile phone to be entertaining, or simply fun. They exhibit a greater propensity to seek novelty in contrast to older people, who use mobile phones during purchases for more pragmatic purposes. Marketing messages targeted at a younger group of consumers should place an emphasis on the additional advantages of the use of mobile phones for shopping, including gamification elements. As younger people became accustomed to buying products on their terms, managers should consider extending the possibility of testing the product and having a longer time for returning the product, if it has not met expectations. Younger consumers want shopping to be amusing, and therefore retailers should avoid intrusive digital advertising of their product (e.g. full-screen overlays, ads covering 100% of webpage, or non-skippable ads), that may upset users when they are watching their favorite content, and can build a negative association with the brand. They should consider an alternative form of advertising, such as high quality content marketing, rewarded videos ad formats (e.g. when users receive a reward for watching an ad while a playing game), and skippable ads.

There is a no significant relationship between *price value* and the *intention to use a mobile for purchases*, but *gender* has a moderating effect on this relationship. These

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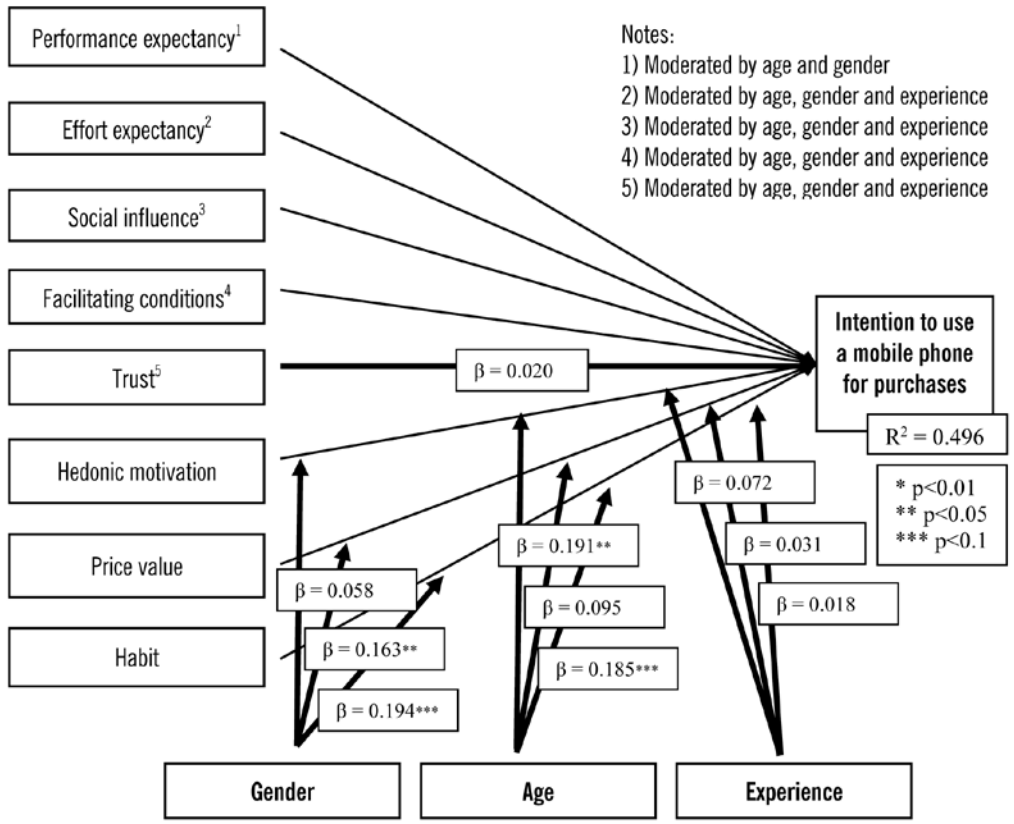
findings have implications that during shopping students in general are not looking for the cheapest products, but rather want to buy products that meet their expectations in terms of usefulness and compatibility with the other products they own. For example, they might consider buying a new iPhone, because it has an efficient and intuitive operating system and works well in combination with other Apple devices for instance a MacBook or an iPad, even though the price is higher in comparison to other brands. The results reveal, that women are more likely to buy the product, if the price is higher, as opposed to men, who are looking more for lower prices. This may be connected with the finding that women are more vulnerable to social influence (opinions of friends and family) and are more concerned about how they are perceived by others and what their social image is. Retailers need to develop effective marketing communication to women, focusing on the appearance of the product, fashionable and up-to date topics and co-operate with well-known, good-looking and esteemed artists (e.g. actress, models or singers).

The relationship between the *habit* and the *intention to use a phone for purchases* is significant and is moderated by *gender* and *age*. The results suggest that the need for retailers to analyze the use habits for consumers visiting their website and/or their mobile application. With usage of heatmaps (graphical representation of data with colors, showing which part of the page is scanned by the user most frequently) and different metrics such as bounce rate (representing the percentage of users who visited page, but left without further exploring the page), retailers can define patterns and repeating behaviors. This is important, because as Venkatesh et al. (2012) denote, habits can be altered by affecting beliefs which caused the development of those habits. Managers can use tools which allow for the experimentation with a website, e.g. displaying a different version of a homepage to the different visitors, or marketing automation tools, which help with the personalization and adjustment of a website to consumer's needs. In this study the impact of *habit* on the *intention to use a mobile phone for purchases* is stronger for an older man. More effort should be placed to prepare more intuitive pages allowing for seamless purchasing by this particular demographic group. Retailers need to prepare bonuses for regular customers, in order to enhance their willingness to visit the website more often, and develop loyalty programs to retain users.

What is interesting, in this study, is that *experience* is not an important moderator of any relationship specified in the hypotheses. This is consistent with the research carried out by Xu (2014). The majority of respondents in the sample group were under 25 years of age and had been accessing the Internet using a computer for many years, even though some of them had limited experience in the area of the mobile Internet. According Social Diagnosis survey (Czapiński and Panek, 2015), 97.4% of people up

to 24 years of age have access to the Internet, while 99.1% of them own a mobile phone. This means that limited experience in using the mobile Internet should not prove to be an obstacle that could negatively affect their *intention to use a mobile phone for purchases*.

Figure 3. Summary of correlations within the adopted model



Source: authors' own.

Research limitations and further research directions

The main limitation of the present study is the sample group. Data was collected among students, i.e. a group that is not representative of society as a whole. Furthermore, researchers have not investigated actual purchases made using a mobile phone, but only the *intention to use a mobile phone for purchases*. Furthers studies carried out among Polish consumers should examine the impact – on both the *intention* to

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buy and actual purchases – of other variables that ought to be added to the UTAUT2 model: those related to the operation of online shops, e.g. website security, quality of customer service, reliability of the online shop and its appearance (Albugami and Bellaaj, 2014), variables pertaining to personal characteristics of the customer, including personal levels of innovation (Rosen, 2005) and the style of making purchase decisions (Mącik, 2013). The impact of other moderating variables, for instance income (Indrawati and Haryoto, 2015) or cultural variables (Baptista and Oliveira, 2015) should also be subject to analysis. Further research may also take into account non-linear relationships between variables (Rondan-Cataluna et al., 2015).

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