



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

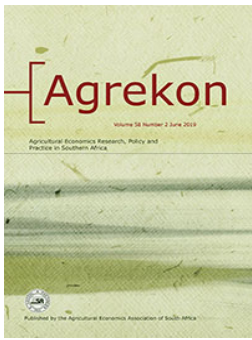
AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.



Agrekon

Agricultural Economics Research, Policy and Practice in Southern Africa



ISSN: 0303-1853 (Print) 2078-0400 (Online) Journal homepage: www.tandfonline.com/journals/ragr20

Would you purchase milk from a milk ATM? Consumers' attitude as a key determinant of preference and purchase intention in uganda

Joanita Kataike, Jowel Kulaba, Andrew Ronnie Mugenyi, Hans De Steur & Xavier Gellynck

To cite this article: Joanita Kataike, Jowel Kulaba, Andrew Ronnie Mugenyi, Hans De Steur & Xavier Gellynck (2019) Would you purchase milk from a milk ATM? Consumers' attitude as a key determinant of preference and purchase intention in uganda, *Agrekon*, 58:2, 200-215, DOI: [10.1080/03031853.2019.1589543](https://doi.org/10.1080/03031853.2019.1589543)

To link to this article: <https://doi.org/10.1080/03031853.2019.1589543>



Published online: 29 May 2019.



Submit your article to this journal [↗](#)



Article views: 255



View related articles [↗](#)




View Crossmark data [↗](#)



Citing articles: 5 View citing articles [↗](#)



Would you purchase milk from a milk ATM? Consumers' attitude as a key determinant of preference and purchase intention in Uganda

Joanita Kataike^{a,b}, Jewel Kulaba^c, Andrew Ronnie Mugenyi^b, Hans De Steur^a
and Xavier Gellynck ^a

^aDepartment of Agricultural Economics, Ghent University, Gent; ^bBusiness and Management Studies, Mountains of the Moon University, Uganda; ^cDepartment of Community Health, Mbarara University of Science and Technology, Uganda

ABSTRACT

Though consumer studies have received significant attention in the field of marketing management, research on consumer attitude towards food supply technologies is needed. This paper investigates the relationship between consumer attitude and preference towards the usage of a 'milk ATM' as the point of sale. Based on data obtained from 296 consumers (convenient sampling), PLS-SEM was used to analyse the proposed conceptual framework. Furthermore, multiple group analysis was conducted to test for group differences between male and female consumers. The findings reveal that whereas the consumer utilitarian and hedonic values are significantly related to preference towards milk ATM purchase intentions, the former are more strongly related to preference than hedonic values. Moreover, there are significant differences between male and female consumers regarding the effect of utilitarian consumer attitude on preference. As a response to consumption goals of trading pasteurised milk, the findings demonstrate that milk ATM consumers are motivated by numerous value dimensions. These dimensions additively contribute to preference and intentions to purchase milk from milk ATMs. This research informs the policy makers and practitioners about the potential of milk ATMs as a point of sale for milk. However, to realise this potential, it is necessary for investors to further examine the core values sought by the consumers and improve in that core value delivery.

ARTICLE HISTORY

Received 29 September 2016
Accepted 21 February 2019

KEYWORDS

consumer attitude; utilitarian value; hedonic value; preference; intention; milk ATM

JEL CLASSIFICATION

J43; M30; M31

1. Introduction

One of the core values for food industries is safety and health (Schiffman & Kanuk, 2010). Globally, it is evidenced that a growing number of consumers are concerned about food safety and quality (Grunert, 2005; Aung & Chang, 2014). Modern milk consumers, for instance, are increasingly interested in healthy and safe milk in order to prevent illness (Mattila-Sandholm *et al.*, 2002). Therefore, trading unpasteurised milk is prohibited because of its associated health risks (McDonald, 2015; Mungai *et al.*, 2015). Consequently, there is rapid growth of innovative agri-food technologies in the food industry to improve quality and market accessibility for both consumers and suppliers (Verbeke, 2011; Caiazza *et al.*, 2014; Chen *et al.*, 2015; Verbeke *et al.*, 2015; Esbjerg *et al.*, 2016; La Scalia *et al.*, 2016). In addition, through these technological innovations, food companies are increasingly seeking to improve food quality and accessibility (Zheng, 2014).

Market practices and agricultural policies have drastically changed due to market de-regulation and increased dominance of multinational new technologies and food quality scares. This has created the need for restructuring the internal environment of food and processing sector (Louw *et al.*, 2008). In other competitive agri-food sectors, firms have continuously innovated and developed their supply chains in order to improve their competitiveness (Costa *et al.*, 2013). For instance, Radio Frequency Identification (RFID) is a technology which provides appealing opportunities to improve the management of information flow within the supply chain and food safety in the agri-food sector. Nowadays, food safety is considered a major requirement in several countries, leading to laws on traceability of food products. This makes such technological implementation in the agri-food sector for quality and traceability crucial (Costa *et al.*, 2013).

In Europe, several new agri-food technologies have been established, such as biotechnology and nanotechnology. However, at the time of establishment, many European consumers did not embrace them (Verbeke, 2011; Verbeke *et al.*, 2015). Therefore, it is important to involve consumers' judgement since they are key stakeholders in determining the success of food technologies in the agri-food industry (Frewer *et al.*, 2011). When it comes to food purchases, for example, agri-food companies need to examine the potential attributes that provide consumers an advantage to opt for food automated purchase systems over traditional market structures (Hollands *et al.*, 2011; Krewinkel *et al.*, 2016; Loeb *et al.*, 2016).

In Uganda, there is a significant increase in milk production and the growing demand is likely to improve productivity at the farm level (Sikawa & Mugisha, 2011). However, about 80 per cent of the marketable milk produced is marketed through traditional informal marketing channels, which are associated with quality problems (Ekou, 2014). It is important to note that the growing middle-class income earners demand quality milk of which informal market structures cannot deliver (Henriksen, 2009). Uganda is advocating for structured milk marketing systems directly from the farm level to the consumer (Balikowa, 2011). In addition, the Dairy Development Authority has concerted efforts to integrate the informal and formal sector in order to control milk quality and safety. As a result, the automated milk dispenser machine, also known as "Anytime Milk" (ATM), is currently being installed in several developing countries to improve milk quality and safety and profits for the dairy farmers. The milk ATM is a certified milk dispenser that distributes pasteurised fresh milk to consumers at an affordable price and with acceptable quality. The milk ATM has an inbuilt cooler to store milk under acceptable milk quality parameters. Since milk is a perishable food product, it is at risk of contamination with harmful bacteria and other germs if not properly stored within acceptable temperatures.

Within the context of this paper, the topic of consumer attitude as a determinant for preference and purchase intention is not new in the extant literature. However, most studies mainly focus on consumer attitude toward food choice motives, for instance Magnusson *et al.* (2001), Hughner *et al.* (2007), Wang *et al.* (2015), Hwang (2016) and Makanyeza and Du Toit (2016) focused on organic and non-organic, Schouteten *et al.* (2015), Hoek *et al.* (2017) and Lee *et al.* (2018) investigated food health labels, whereas Overby and Lee (2006), Wu and Ke (2015) and Yeo *et al.* (2017) examined online shopping attitude. In this regard, the question of how consumers perceive agri-food technologies such as milk ATMs is still an open question. Presently, little is known whether consumers would purchase milk from a milk ATM. In order to address this gap, this study aims to assess consumer attitude as a key determinant for preference and purchase intention of milk from a milk ATM in Uganda.

The remainder of this paper is structured as follows. Section 2 presents the theoretical and conceptual issues, followed by the research methodology in Section 3. Results and discussion are provided in Section 4, while Section 5 deals with the conclusions, together with the research contribution, implications, limitations and future research outlook.

2. Theoretical and conceptual background

The theoretical background informing this research draws from three prominent theories in the field of consumer behaviour: technology acceptance model (TAM), the theory of reasoned action (TRA),

and its predecessor, the theory of planned behaviour (TPB) (Venkatesh, 2000). Firstly, the TAM is an information system theory which elaborates how stakeholders accept a particular technology of innovation. It was developed by Davis *et al.* (1989) to explain computer-usage behaviour. The theory assumes that when people are presented with new technology their decision about how and when to use it is influenced by a number of factors; such as the usefulness of the technology, the easiness and behavioural intentions. Notably, it states that attitude towards a new product or technology innovation as well as the subsequent behaviour of using the technology or the product are determined by perceived usefulness and perceived ease to use.

Secondly, the TRA was developed in the 1950s, with the first published research in 1967 by Ajzen and Fishbein (1967). Since then TRA has been tested, developed and used extensively in numerous consumer studies and extended in various research fields (Mishra *et al.*, 2014; Bagozzi *et al.*, 2014; Paul *et al.*, 2016; Hussain *et al.*, 2016). Its extension resulted in the theory of planned behaviour. TRA has proven successful in predicting and explaining behaviour across a wide variety of domains. TRA assumes that consumers behave rationally and collect and evaluate systematically all the available information. Additionally, the theory assumes that people consider the effects of their possible actions to decide whether or not to take an action (Ajzen & Fishbein, 1980). From the consumer perspective, one relevant element of TRA is its assertion that any other factors that influence behaviour are indirectly influenced by attitude. Similar to the TAM, beliefs influence attitudes, which in turn lead to intentions that guide consumer behaviour.

Thirdly, the TPB has gained significant attention in research over the past two decades (Vermeir & Verbeke, 2006; Carman, 1990; Lee & Yun, 2015; Schouteten *et al.*, 2015; Wang *et al.*, 2015; Makanyeza and Du Toit, 2016). Nevertheless, most of these studies focus on organic and non-organic food choice motives (Magnusson *et al.*, 2001; Hughner *et al.*, 2007; Lee & Yun, 2015; Vainio *et al.*, 2015; Hwang, 2016; Seegebarth *et al.*, 2016). This theory proposes that motivational factors influence the behaviour of people and their willingness to try or not to try new products. For instance, how much effort people need to change their behaviour to purchase milk from milk ATMs instead of buying from non-automatic dispensers depends on the motivational factors exhibited by milk ATMs. The empirical support for the theory of planned behaviour comes from a host of studies demonstrating its ability to predict intentions and behaviour (Ajzen, 2011; Chen & Tung, 2014; Ajzen, 2015; Yadav & Pathak, 2016).

2.1 Conceptual issues and hypotheses

In order to examine the relationship between consumer attitudes, preference and purchase intentions, one must understand the meaning of consumer attitude and its related dimensions. Perner (2010) defines consumer attitude simply as a composite of consumer's beliefs, feelings and behavioural intentions toward some products or services within the context of marketing. In other words, a consumer can hold negative or positive beliefs or feelings toward a product or service.

Alternatively, Kinnear and Taylor (1996) argue that consumer attitude is the consumer's liking, endorsement or preference for product attributes. It summarises the criteria which consumers use to make decisions regarding what products to buy or not to buy. Consequently, recent researchers argue that consumer attitudes explain how people's beliefs and knowledge lead to attitudes. Furthermore, how the information is integrated to generate attitudes toward actions and influence people's intentions to perform behaviours is driven by consumer attitude (Vermeir & Verbeke, 2006; Young *et al.*, 2010; Ajzen, 2011; Kardes *et al.*, 2017; Hung *et al.*, 2018).

The school of thought holds the view that consumer attitudes are concerned with a predisposition of individuals to respond favourably or unfavourably to particular products or services. Therefore, it has been presented that personal functional judgement values and experiential benefits are combined to assess consumer attitudes (Howcroft *et al.*, 2002; Overby & Lee, 2006; Wang *et al.*, 2015).

Thereby, two value dimensions, the utilitarian value and hedonic value, are universal in defining consumer attitudes (Overby & Lee, 2006; To *et al.*, 2007).

2.1.1 Utilitarian consumer attitudes

Previous studies have shown that consumers become more involved with a product or service when personal consequences are highlighted and its importance is emphasised (Vermeir & Verbeke, 2006). In this regard, utilitarian consumer attitude is an overall assessment of judging functional benefits and sacrifices (Jones *et al.*, 2006; Porter & Donthu, 2006; Su *et al.*, 2013; Schade *et al.*, 2016). Thus, product price, quality attributes and time, can be considered as functional benefits and sacrifices by the consumers before actual purchase (Hoffman & Novak, 1996; Overby & Lee, 2006; Maehle *et al.*, 2015; Bilgihan *et al.*, 2016; Lee & Hosanagar, 2016;). Furthermore, utilitarian value incorporates more cognitive aspects of attitude such as the economic value (see Zeithaml, 1988); the usefulness of a product, e.g., Jarvenpaa and Todd (1996), Teo (2001), Prebensen *et al.* (2016); and freshness, e.g., Verbeke *et al.* (2015). It is important to note consumers can also purchase because of convenience (Verbeke *et al.*, 2015; Wang *et al.*, 2015). In brief, consumer behaviour driven by utilitarian value is typically satisfying. Consumers who place emphasis on utilitarian value in purchasing milk from milk ATMs are expected to be more likely motivated by its functionality and economic value.

2.1.2 Hedonic consumer attitude

Hedonic value is more subjective and personal than utilitarian value. It is the experiential and emotional motivations of consumer behaviour that can be derived from the multisensory, emotive and entertainment aspects experienced during consumption process (Hoffman & Novak, 1996; Overby & Lee, 2006). Consumers often purchase for appreciation of experience (Babin *et al.*, 1994). Hedonic attributes have been the subject of consumer research in regard to technology adoption (Marr & Prendergast, 1993, Lewis, 1991; Howcroft *et al.*, 2002; Dennis *et al.*, 2007). Purchasing processes associated with fun and excitement influence consumer's purchase intentions (Im *et al.*, 2015; Lee & Yun, 2015; Kesari & Atulkar, 2016). Consumers would not prefer exhausting purchasing processes since it is always not a good experience and preference could be deviated (Overby & Lee, 2006). Even Bagozzi (1992) and Hsu and Chen (2014) argue that unless preference is present, future purchasing intentions may not be activated. Thus, the hedonic value cannot be isolated from the influence of consumer preference and purchase intentions (Childers *et al.*, 2002).

Consequently, both utilitarian and hedonic values are higher-level consumption goals that motivate and direct consumers' behaviour and purchase decision-making (Gutman, 1997; Chiu *et al.*, 2014; Kang & Park-Poaps, 2010). These two regulate consumer actions including behavioural intentions of loyalty towards a service or product (Carver & Scheier, 1990). Similarly, Bridges and Florsheim (2008) identify utilitarian and hedonic values as the goals that guide consumer behaviour. For experienced customers, value judgements are derived from the past consumption experiences that facilitate or block the achievement of their purchase intentions (Woodruff, 1997). Then, purchase intention is formed according to how these value judgements help consumers to achieve their final goals.

Furthermore, Babin *et al.* (1994) suggest that hedonic and utilitarian values are important outcomes influencing future consumer decisions through feedback loops into the consumer decision processes. Consumers should have a greater future purchase intention towards a product if it provides higher utilitarian and hedonic values. Prior research has also shown the importance of utilitarian and hedonic values in driving preference and purchase intentions (Jones *et al.*, 2006; Ryu *et al.*, 2010; Prebensen & Rosengren, 2016). Similarly, Mathwick *et al.* (2001) found that utilitarian and hedonic value have a direct and positive effect upon preference for internet retailers. Early research by Kaplan *et al.* (1974) and Jacoby and Kaplan (1972) also show that utilitarian and hedonic value have a direct and positive effect preference. Basing on this theoretical background the following hypotheses are proposed:

H1: Utilitarian consumer attitude is positively related to preference for milk purchasers at the milk ATM.

H2: Hedonic consumer attitude is positively related to preference for milk purchasers at the milk ATM.

2.1.3 Preference and purchase intentions

Preference is believed to influence future consumer outcomes, including intentions, and willingness to buy (Dodds *et al.*, 1991; Bagozzi, 1992; Chen & Chang, 2008; Chang & Liu, 2009). Although Fishbein and Stasson (1990) believe that intentions are motivational in nature just as preference, Bagozzi (1992) argues that preference is distinct from intentions. Bagozzi (1992) emphasises that preference is needed before purchase intentions occur. Chiu *et al.* (2014) state that purchase intentions refer to the subjective probability that a customer will continue to purchase a product from the same seller.

Similarly, initial purchase intention reflects the likelihood that a potential customer will purchase from a seller for the first time at a given point in time. This is why it is proposed that preference for the milk ATMs will positively influence consumer purchase intentions. This is consistent with research that has linked value to preference and purchase intentions (Mathwick *et al.*, 2001; Chen & Chang, 2008; Shirdastian & Laroche, 2017; Thammawimutti & Chaipoopirutana, 2018). In similar research, preference has been linked to purchasing intentions (Andreassen & Lindstad, 1998; Erdem & Swait, 1998; Pritchard *et al.*, 1999; Mohseni *et al.*, 2018). Based on the proceeding literature review about preference and purchase intentions, the following hypothesis is proposed:

H3: Preference for purchasing milk from milk ATM is positively related to purchase intention.

Furthermore, although it is anticipated that there will be a positive relationship between consumer attitudes (utilitarian and hedonic value) and preference towards milk ATM purchasers, the effect of consumer attitudes on preference to purchase milk from milk ATMs is expected to be stronger for males than for females. Males are described as task oriented and are more likely to seek functional utility aspects and experiential services than females (Yang & Lee, 2010; Jackson *et al.*, 2011). Extant literature shows that males and females have different consumer attitudes (Darley & Smith, 1995; Fischer & Arnold, 1994). Consequently, males and females differ in many aspects of consumption, including product choice and product positioning (Zeithaml, 1988). Moreover, Chang *et al.* (2004) found that the role of hedonic value in consumer satisfaction differs between males and females.

Carpenter and Moore (2009) also found that, regardless of the type of store, females perceive significantly higher levels of hedonic value, as compared to males. Research has further shown that utilitarian purchasing values may be lower for males (Kavussanu & Roberts, 2001). Gender is considered a predictor of consumer activities as females are more likely than males to engage in preferences and purchase intentions (Oh *et al.*, 2004). Since gender has been significant in consumption behaviour in the extant literature, we expect significant gender differences in the use of ATMs to purchase milk. In this regard, the following hypotheses are investigated:

H4a: The effect of utilitarian consumer attitude on preference is significantly different between males and females towards purchasing milk from milk ATM.

H4b: The effect of hedonic consumer attitude on preference is significantly different among males and females towards milk ATM.

H4c: The effect of preference on purchasing intentions of milk from milk ATM is significantly different among the two gender groups.

The conceptual framework (Figure 1), based on Overby and Lee (2006), maps the determinants of consumer attitudes, preference, and purchase intentions and test the hypothesised relationships.

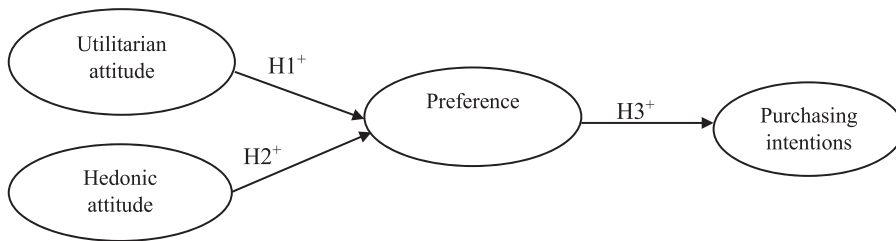


Figure 1. Conceptual model. Source: Own compilation based on Overby and Lee (2006).

3. Methodology

3.1 Data collection and measures

The measurement scales were developed from previously published studies. The seven items which measured utilitarian value were adopted from Lee *et al.* (2002), Overby and Lee (2006) and YuliaWardani and Warsono (2012). In addition, the hedonic value was measured by six items adapted from Voss *et al.* (2003), Arnold and Reynolds (2003) and Scarpi (2012). Four items measured preference and purchase intentions respectively as examined by Bagozzi (1992), Chen and Chang (2008), Chang and Liu (2009) and Chiu *et al.* (2014). A five-point Likert scale ranging from “1 = strongly disagree” to “5 = strongly agree” were used to measure all constructs. In order to assess its logical consistency, the scales were refined through expert review and a pre-test, where the sequence of items and contextual relevance was considered by 20 respondents with milk ATM buying experience. The final questionnaire was revised in terms of appropriate word selection in the context of milk ATM sample characteristics. A complete questionnaire is attached as [Appendix A](#).

Purchasers of milk from milk ATMs were selected during purchasing hours. Convenience sampling was used because research enumerators easily gained access to the respondents. Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher. It is the most appropriate sampling technique for consumer surveys (Kivela *et al.*, 1999). The convenience sample helps the researcher to gather useful data and information that would not have been possible using probability sampling techniques, which require more formal access to lists of populations (Janssens *et al.*, 2008). However, it is important to note that a convenience sample often suffers from biases, because the sampling frame is not known. The sample is not chosen at random, the inherent bias in convenience sampling means that the sample is unlikely to be representative of the population being studied. This undermines the ability to make generalisations from the study sample. The desire of the ongoing pilot project to improve short food supply chains in the dairy sector facilitated the choice to select ATM milk selling points.

After obtaining the consent of the respondents, they voluntarily answered the questionnaire without receiving any cash incentives. During questionnaire administration, respondents were asked to respond to 21 questions assessing consumer attitude, preference and intentions of buying milk from the milk ATM. A total of 303 questionnaires were collected, of which seven were incomplete and were discarded. The 296 complete questionnaires were entered into SPSS for descriptive data analysis. Data were then transferred into Smart-PLS 3.0 for further analyses.

3.2 Data analysis

In SMARTPLS-SEM, factor loadings are indicated within the measurement model as indicator loadings for each construct as outer loadings. We ran the measurement model including all factors. Indicators with low loading values do not support the measurement model. Hair *et al.* (2014) suggests that indicator loadings which are 0.50 or higher should be retained in the measurement model. In our case, two indicators of the latent variable utilitarian attitude are excluded from the measurement model.

Furthermore, rather than using a well-known LISREL model Jöreskog and Sörbom (1981), the method of latent variables Partial Least Squares (PLS) was employed (Wold, 1980). PLS places minimal restrictions on the measurement scales, sample size and residual distribution (Hair Jr *et al.*, 2016). It requires the basic assumptions of least-squares estimation to be satisfied (Han *et al.*, 2011). The estimation is distraction-free and does not pose identification problems. It can be used with all types of samples and permits the same freedom with respect to measurement scales as ordinary regression. To statistically evaluate the model, one can either invoke the traditional assumptions about residuals or use bootstrap in combination with the traditional measures of goodness-of-fit.

In PLS, bootstrapping is one of the re-sampling procedures used to examine the stability of estimates (Hair *et al.*, 2014). N sample datasets are created in order to obtain N estimates for each parameter in the PLS model. The bootstrapping procedure utilises a confidence estimation procedure other than the normal approximation (Hair Jr *et al.*, 2016). This procedure results in t -statistics, which help in judging whether the proposed relationships are significant or not. Following Henseler *et al.* (2009), a method of resampling bootstrapping with 500 samples were run. Lastly, multiple group modelling is used to determine whether or not the grouping variable gender has a significant effect on the observed variables.

4. Results and discussion

4.1 Measurement model evaluation

The individual item reliability and internal consistency (composite reliability) and the square root of variance extracted were examined following the criteria of Hair *et al.* (2012). The results of the individual item reliability are listed in Table 1. Low factor loading items were deleted from the subsequent analysis. During factor analysis, the items for the construct utilitarian value turned out to consist of five sub-items, instead of the original seven items. In particular, items affordable price (0.35) and

Table 1. Factor loadings for measurement items.

Variables	Factor loadings
Consumer utilitarian attitude	
Milk is safe	0.87
The price is affordable	0.35
The quality is trustworthy	0.93
It is time-saving to purchase from milk ATM	0.83
It offers good economic value	0.40
Milk purchased from milk ATM is ever fresh (usefulness)	0.72
It is convenient	0.78
Consumer hedonic attitude	
It is fun making a purchase from a milk ATM	0.92
It is exciting purchasing milk from a milk ATM	0.88
It is necessary to purchase from a milk ATM	0.91
Am delighted to purchase milk from a milk ATM	0.88
It is a solution to milk quality concerns (usefulness)	0.86
It is ease to purchase milk from a milk ATM	0.90
Preference	
Milk ATM is my first choice to purchase milk	0.88
I prefer buying milk from milk ATM	0.86
I recommend family and friends	0.90
Milk ATM is my primary source of fresh milk	0.88
Purchasing intentions	
I will buy milk from milk ATM in future	0.90
I intend to continue buying from milk ATM	0.87
I consider myself to be a loyal customer	0.88
I will recommend family and friend to purchase milk from ATM	0.89

Notes: A five-point Likert scale: Strongly disagree = 1; disagree = 2; neutral = 3; agree = 4; strongly agree = 5.

Table 2. Reliability and validity of the constructs.

Variables	Items	Cronbach's α	Composite reliability	AVE
Utilitarian attitude	5	0.94	0.93	0.74
Hedonic attitude	6	0.95	0.96	0.80
Preference	4	0.91	0.93	0.78
Purchase intentions	4	0.91	0.94	0.79

Notes: Fit statistics: $\chi^2 = 597.143$; df 108; CFI = 0.93; IFI = 0.92; GFI = 0.90; SRMR = 0.040.

economic value (0.40) were discarded. The remaining five items were loading higher than 0.7 suggesting that the items are a good measure of the variable utilitarian.

Furthermore, internal consistency was assessed by composite reliability. Composite reliability varies from 0 to 1, with 1 being perfect estimated reliability (Henseler *et al.*, 2015). In a model adequate for exploratory purposes, composite reliabilities should be equal to or more than 0.70 (Chin, 1998; Hock *et al.*, 2010). The result shows that the composite reliability value proves that the reflective indicators have more levels of internal consistency reliability. In addition, the square root of the average variance extracted (AVE) ranges from 0.74 to 0.80 indicating that the variance captured by the construct was greater than the variance due to measurement error (Hair *et al.*, 2013; Byrne, 2013). The average variance explained R^2 for utilitarian value is 78 per cent and 69 per cent for hedonic value, which indicates robust exploratory power.

4.2 Hypothesis testing

PLS-SEM provides standardised path coefficients for the hypothesised relationships. It was observed that milk ATM purchasers' utilitarian value has a significant positive effect on preference ($t = 9.109$, $p < 0.05$). The finding supports hypothesis 1 ($H1$) as shown in Table 3. The results suggest that milk ATMs are perceived as useful in quality improvement and convenience options for purchasing milk. Furthermore, in regard to hypothesis 2 ($H2$), hedonic consumer value has a significant positive effect on preference ($t = 4.103$, $p < 0.05$). The results imply that experiential emotions of milk ATM purchasers such as fun, excitement and easiness, influence consumers' preference. Thus, $H1$ and $H2$ were both supported. The two variables significantly influence the preference for purchasing milk from milk ATMs. Overall, utilitarian value observed a higher coefficient on preference towards the milk ATM than hedonic values. These results are in accordance to previous studies on consumer attitude in relation to functional and pleasurable aspects of purchasing preference (Overby & Lee, 2006; Chiu *et al.*, 2014; Lee & Yun, 2015). In addition, our results demonstrated that preference has a significant effect on intention ($t = 22.501$, $p < 0.01$). Thus, hypothesis 3 ($H3$) was also supported. TAM assumes that perceived usefulness and perceived ease of use affect consumer purchase intention (Davis *et al.*, 1989; Overby & Lee, 2006). The findings are in accordance with Haugaard *et al.* (2014), who found that innovative food technologies improve efficiency and customer convenience. In other words, consumers positively appreciate food technologies for improving food quality and safety.

4.3 Multiple group differences between males and females

The study hypothesis 4a, 4b, and 4c ($H4a$, $H4b$, $H4c$) examined differences in gender. The gender distribution was as follows: 144 (48.6%) males and 152 (51.4%) females. The results of the multiple

Table 3. Correlation coefficients.

Hypothesis	Standardised estimates	t -values
Utilitarian attitude \rightarrow Preference	0.348	9.109*
Hedonic attitude \rightarrow Preference	0.156	4.103*
Preference \rightarrow Purchase intentions	0.837	22.501**

Notes: *significant at $p < 0.05$; **significant at $p < 0.01$.

Table 4. Multiple group estimates for gender group differences.

Path coefficients	Males (<i>n</i> = 144)	Females (<i>n</i> = 152)	Df	Hypothesis
	<i>t</i> values	<i>t</i> values		
Utilitarian attitude → Preference	2.712*	1.962*	−0.75	Accepted
Hedonic attitude → Preference	1.217***	0.859***	−0.358	Rejected
Preference → Purchasing intentions	14.525**	16.627**	2.102	Accepted

Notes: * $p < 0.01$; ** $p < 0.05$; ***insignificant.

group analysis indicate that there are significant differences among male ($t = 2.712$, $p < 0.05$) and female ($t = 1.962$, $p < 0.05$) purchasers with respect to the relationship between utilitarian consumer attitude and preference. Thus, *H4a* was supported. The results are in line with previous research showing that males and females exhibit different consumer attitudes and preferences (Yang & Lee, 2010; Jackson *et al.*, 2011; Darley & Smith, 1995; Fischer & Arnold, 1994). Our results confirmed that male purchasers are more likely to seek utilitarian aspects of purchasing milk from a milk ATM than females.

The path coefficients in Table 4 predicting differences between male and female purchasers in relation to hedonic value and preference was not significant ($t = 1.217$, $p > 0.05$) for men and ($t = 0.859$, $p > 0.05$) for women. Thus, *H4b* was not supported. This suggests that hedonic values that deal with experience or emotions felt during the purchase process are similar for male and female purchasers. However, *H4c* revealed again significant gender difference, in this case regarding the effect of preference on purchasing intentions (males $t = 14.525$, $p < 0.01$, females $t = 16.627$, $p < 0.01$). Therefore, this hypothesis was supported. This was also reported in the studies of Carpenter and Moore (2009) and Kavussanu and Roberts (2001).

5. Conclusions and study implications

Using survey data collected from 296 milk ATM consumers in Uganda, the study investigated the relationship between consumer attitudes (utilitarian and hedonic values) on preference and purchase intention of milk ATMs. The result reveals that milk ATM purchasers attribute multiple value dimensions which contribute to preference. Thereby, the utilitarian value has a larger effect on preference than the hedonic value. Purchasers of milk from milk ATM primarily appreciate the utilitarian reasons because of its convenience and time-saving elements. In relation to the TRA, consumer decisions are based on the relative attractiveness of the available alternatives (Ajzen & Fishbein, 1980). This study demonstrates that utilitarian and hedonic value dimensions play similar roles in predicting the outcome for preference and purchase intention. Given the current study, policies that support short agri-food supply chains could increase investments in this technology (milk ATM) to increase the market for the dairy sector.

The study findings also revealed that female purchasers' utilitarian values significantly differ from male purchasers. It is confirmed that males are more likely to seek utilitarian values than females. In other words, male purchasers are more likely to be driven by new food technologies than females. This contradicts another recent study where females have shown to be significantly more positive towards technological aspects than males (Yang & Lee, 2010). Developers need to understand the importance males and females attach to (different) attributes that relate to utilitarian values. This is not so true for hedonic values, where the influence of hedonic values on preference and intentions to purchase is similar for both genders.

The study also showed that two specific utilitarian indicators, namely price affordability and economic value, were perceived weak factor loadings. While price and economic value information should be considered by the policy makers in order to monitor consumers' sustainable preference for purchasing milk from milk ATMs, consumers in our sample seem to prefer buying milk from ATMs, regardless of low attribution to price and economic value.

In conclusion, it is important to note that the current research was examined from a purchaser's perspective, targeting buyers' utilitarian value and hedonic value on preference and purchase intentions. A key future research question would be to evaluate the views of different stakeholders of the dairy value chain. Nevertheless, the study provides novel insights on milk ATMs at its infancy stage, which could lay a foundation for future research and further exploit the potential for investment in such short agri-food chains.

Acknowledgments

We are grateful for the two anonymous reviewers for their insightful and valuable comments during the review process. We express our sincere gratitude to Prof. Johann Kirsten, Editor of *Agrekon*, and Eunike Gregorio for guiding us through the revision and publication process.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

ORCID

Xavier Gellynck  <http://orcid.org/0000-0002-8908-3310>

References

- Ajzen, I. 2011. Theory of planned behaviour. *Handbook of theories of social psychology. Vol One*, 1, 438.
- Ajzen, I. 2015. Consumer attitudes and behaviour: The theory of planned behaviour applied to food consumption decisions. *Rivista di Economia Agraria/Italian Review of Agricultural Economics* 70(2): 121–138.
- Ajzen, I. and Fishbein, M. 1967. *Readings in attitude theory and measurement*. New York: Wiley.
- Ajzen, I. and Fishbein, M. 1980. *Understanding attitudes and predicting social behaviour*. New York: Wiley.
- Andreassen, T.W. and Lindestad, B. 1998. The effect of corporate image in the formation of customer loyalty. *Journal of Service Research* 1(1): 82–92.
- Arnold, M.J. and Reynolds, K.E. 2003. Hedonic shopping motivations. *Journal of Retailing* 79(2): 77–95.
- Aung, M.M. and Chang, Y.S. 2014. Traceability in a food supply chain: Safety and quality perspectives. *Food Control* 39: 172–184.
- Babin, B.J., Darden, W.R. and Griffin, M. 1994. Work and/or fun: measuring hedonic and utilitarian shopping value. *Journal of Consumer Research* 20(4): 644–656.
- Bagozzi, R.P. 1992. The self-regulation of attitudes, intentions, and behaviour. *Social Psychology Quarterly*: 178–204.
- Bagozzi, R.P., Wong, N., Abe, S. and Bergami, M. 2014. Cultural and situational contingencies and the theory of reasoned action: Application to fast food restaurant consumption. *Journal of Consumer Psychology* 9(2): 97–106.
- Balikowa, D. 2011. Dairy development in Uganda. A review of Uganda's dairy industry. *Dairy Development Authority Uganda* 3202: 1–215.
- Bilgihan, A., Kandampully, J. and Zhang, T. 2016. Towards a unified customer experience in online shopping environments: Antecedents and outcomes. *International Journal of Quality and Service Sciences* 8(1): 102–119.
- Bridges, E. and Florsheim, R. 2008. Hedonic and utilitarian shopping goals: The online experience. *Journal of Business Research* 61(4): 309–314.
- Byrne, B.M. 2013. *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. New York: Routledge.
- Caiazza, R., Volpe, T. and Audretsch, D. 2014. Innovation in agro-food chain: Policies, actors and activities. *Journal of Enterprising Communities: People and Places in the Global Economy* 8(3): 180–187.
- Carman, J. M. 1990. Consumer perceptions of service quality: An assessment of the SERVQUAL dimensions. *Journal of retailing* 66(1): 33–55.
- Carpenter, J.M. and Moore, M. 2009. Utilitarian and hedonic shopping value in the US discount sector. *Journal of Retailing and Consumer Services* 16(1): 68–74.
- Carver, C.S. and Scheier, M.F. 1990. Origins and functions of positive and negative affect: A control-process view. *Psychological Review* 97(1): 19–35.
- Chang, E., Burns, L.D. and Francis, S.K. 2004. Gender differences in the dimensional structure of apparel shopping satisfaction among Korean consumers: The role of hedonic shopping value. *Clothing and Textiles Research Journal* 22(4): 185–199.

- Chang, H.H. and Liu, Y.M. 2009. The impact of brand equity on brand preference and purchase intentions in the service industries. *Service Industries Journal* 29(12): 1687–1706.
- Chen, C.-F. and Chang, Y.-Y. 2008. Airline brand equity, brand preference, and purchase intentions – The moderating effects of switching costs. *Journal of Air Transport Management* 14: 40–42.
- Chen, M.-F. and Tung, P.-J. 2014. Developing an extended theory of planned behaviour model to predict consumers' intention to visit green hotels. *International Journal of Hospitality Management* 36(1): 221–230.
- Chen, T., Chen, G., Yang, S., Zhao, Y., Ha, Y. and Ye, Z. 2015. Recent developments in the application of nuclear technology on agro-food quality and safety control in China. *Food Control* 72(1): 306–312.
- Childers, T.L., Carr, C.L., Peck, J. and Carson, S. 2002. Hedonic and utilitarian motivations for online retail shopping behaviour. *Journal of Retailing* 77(4): 511–535.
- Chin, W. 1998. The partial least squares approach for structural equation modelling. In *Modern Methods for Business Research*, ed. Marcoulides, G.A., 295–236. London: Erlbaum Associates.
- Chiu, C.M., Wang, E.T., Fang, Y.H. and Huang, H.Y. 2014. Understanding customers' repeat purchase intentions in B2C e-commerce: the roles of utilitarian value, hedonic value and perceived risk. *Information Systems Journal* 24(1): 85–114.
- Costa, C., Antonucci, F., Pallottino, F., Aguzzi, J., Sarriá, D. and Menesatti, P. 2013. A review on agri-food supply chain traceability by means of RFID technology. *Food and Bioprocess Technology* 6(2): 353–366.
- Darley, W.K. and Smith, R.E. 1995. Gender differences in information processing strategies: An empirical test of the selectivity model in advertising response. *Journal of Advertising* 24(1): 41–56.
- Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. 1989. User acceptance of computer technology: A comparison of two theoretical models. *Management Science* 35(8): 982–1003.
- Dennis, C., King, T., Kim, J. and Forsythe, S. 2007. Hedonic usage of product virtualization technologies in online apparel shopping. *International Journal of Retail and Distribution Management* 35(6): 502–514.
- Dodds, W.B., Monroe, K.B. and Grewal, D. 1991. Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research* 28(3): 307–319.
- Ekou, J. 2014. Dairy production and marketing in Uganda: Current status, constraints and way forward. *African Journal of Agricultural Research* 9: 881–888.
- Erdem, T. and Swait, J. 1998. Brand equity as a signaling phenomenon. *Journal of Consumer Psychology* 7(2): 131–157.
- Esbjerg, L., Burt, S., Pearse, H. and Glanz-Chanos, V. 2016. Retailers and technology-driven innovation in the food sector: Caretakers of consumer interests or barriers to innovation? *British Food Journal* 118(6): 1370–1383.
- Fischer, E. and Arnold, S.J. 1994. Sex, gender identity, gender role attitudes, and consumer behaviour. *Psychology and Marketing* 11(2): 163–182.
- Fishbein, M. and Stasson, M. 1990. The role of desires, self-predictions, and perceived control in the prediction of training session attendance. *Journal of Applied Social Psychology* 20(3): 173–198.
- Frewer, L., Bergmann, K., Brennan, M., Lion, R., Meertens, R., Rowe, G., Siegrist, M. and Vereijken, C. 2011. Consumer response to novel agri-food technologies: implications for predicting consumer acceptance of emerging food technologies. *Trends in Food Science and Technology* 22(8): 442–456.
- Grunert, K.G. 2005. Food quality and safety: consumer perception and demand. *European Review of Agricultural Economics* 32(3): 369–391.
- Gutman, J. 1997. Means-end chains as goal hierarchies. *Psychology and Marketing* 14(6): 545–560.
- Hair, J., Black, W., Babin, B. and Anderson, R. 2013. *Multivariate data analysis*. Pearson new international edition. Upper Saddle River, NJ: Pearson.
- Hair, J. F., Sarstedt, M., Pieper, T.M. and Ringle, C.M. 2012. The use of partial least squares structural equation modeling in strategic management research: A review of past practices and recommendations for future applications. *Long Range Planning* 45(5–6): 320–340.
- Hair Jr, J.F., Hult, G.T.M., Ringle, C. and Sarstedt, M. 2016. *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks, CA: Sage Publications.
- Han, J., Trienekens, J.H. and Omta, S.O. 2011. Relationship and quality management in the Chinese pork supply chain. *International Journal of Production Economics* 134(2): 312–321.
- Haugaard, P., Hansen, F., Jensen, M. and Grunert, K.G. 2014. Consumer attitudes toward new technique for preserving organic meat using herbs and berries. *Meat science* 96(1): 126–135.
- Henriksen, J. 2009. *Milk for health and wealth*. Rome: Food and Agriculture Organization of the United Nations (FAO).
- Henseler, J., Ringle, C.M. and Sarstedt, M. 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science* 43(1): 115–135.
- Henseler, J., Ringle, C.M. and Sinkovics, R.R. 2009. The use of partial least squares path modeling in international marketing. In *New challenges to international marketing*. Bingley, UK: Emerald Group Publishing Limited.
- Hock, C., Ringle, C.M. and Sarstedt, M. 2010. Management of multi-purpose stadiums: Importance and performance measurement of service interfaces. *International Journal of Services Technology and Management* 14(2–3): 188–207.
- Hoek, A., Pearson, D., James, S., Lawrence, M. and Friel, S. 2017. Shrinking the food-print: A qualitative study into consumer perceptions, experiences and attitudes towards healthy and environmentally friendly food behaviours. *Appetite* 108: 117–131.

- Hoffman, D.L. and Novak, T.P. 1996. Marketing in hypermedia computer-mediated environments: Conceptual foundations. *Journal of Marketing* 60(3): 50–68.
- Hollands, G.J., Prestwich, A. and Marteau, T.M. 2011. Using aversive images to enhance healthy food choices and implicit attitudes: An experimental test of evaluative conditioning. *Health Psychology* 30(2): 195–203.
- Howcroft, B., Hamilton, R. and Hewer, P. 2002. Consumer attitude and the usage and adoption of home-based banking in the United Kingdom. *International Journal of Bank Marketing* 20(3): 111–121.
- Hsu, C.-L. and Chen, M.-C. 2014. Explaining consumer attitudes and purchase intentions toward organic food: Contributions from regulatory fit and consumer characteristics. *Food Quality and Preference* 35: 6–13.
- Hughner, R.S., McDonagh, P., Prothero, A., Shultz, C.J. and Stanton, J. 2007. Who are organic food consumers? A compilation and review of why people purchase organic food. *Journal of Consumer Behaviour* 6(2–3): 94–110.
- Hung, S.-Y., Yu, A. P.-I. and Chiu, Y.-C. 2018. Investigating the factors influencing small online vendors' intention to continue engaging in social commerce. *Journal of Organizational Computing and Electronic Commerce* 28(1): 9–30.
- Hussain, I., Rahman, S. u., Zaheer, A. and Saleem, S. 2016. Integrating factors influencing consumers' halal products purchase: Application of theory of reasoned action. *Journal of International Food and Agribusiness Marketing* 28(1): 35–58.
- Hwang, J. 2016. Organic food as self-presentation: The role of psychological motivation in older consumers' purchase intention of organic food. *Journal of Retailing and Consumer Services* 28: 281–287.
- Im, S., Bhat, S. and Lee, Y. 2015. Consumer perceptions of product creativity, coolness, value and attitude. *Journal of Business Research* 68(1): 166–172.
- Jackson, V., Stoel, L. and Brantley, A. 2011. Mall attributes and shopping value: Differences by gender and generational cohort. *Journal of Retailing and Consumer Services* 18(1): 1–9.
- Jacoby, J. and Kaplan, L.B. 1972. The components of perceived risk. In *SV – Proceedings of the Third Annual Conference of the Association for Consumer Research*, eds M. Venkatesan, 382–393. Chicago, IL: Association for Consumer Research.
- Janssens, W., De Pelsmacker, P. and Van Kenhove, P. 2008. *Marketing research with SPSS*. New York: Pearson Education.
- Jarvenpaa, S.L. and Todd, P.A. 1996. Consumer reactions to electronic shopping on the World Wide Web. *International Journal of Electronic Commerce* 1(2): 59–88.
- Jones, M.A., Reynolds, K.E. and Arnold, M.J. 2006. Hedonic and utilitarian shopping value: Investigating differential effects on retail outcomes. *Journal of Business Research* 59(9): 974–981.
- Jöreskog, K.G. and Sörbom, D. 1981. *LISREL V: Analysis of linear structural relationships by maximum likelihood and least squares methods*. Department of Statistics, University of Uppsala.
- Kang, J. and Park-Poaps, H. 2010. Hedonic and utilitarian shopping motivations of fashion leadership. *Journal of Fashion Marketing and Management* 14(2): 312–328.
- Kaplan, L.B., Szybillo, G.J. and Jacoby, J. 1974. Components of perceived risk in product purchase: A cross-validation. *Journal of Applied Psychology* 59(3): 287–291.
- Kardes, F. R., Pogacar, R., Hassey, R. and Wu, R. 2017. Cognitive influences on brand attitudes. *Routledge companion to consumer behaviour*. New York: Routledge.
- Kavussanu, M. and Roberts, G.C. 2001. Moral functioning in sport: An achievement goal perspective. *Journal of Sport and Exercise Psychology* 23(1): 37–54.
- Kesari, B. and Atulkar, S. 2016. Satisfaction of mall shoppers: A study on perceived utilitarian and hedonic shopping values. *Journal of Retailing and Consumer Services* 31: 22–31.
- Kinney, T.C. and Taylor, J.R. 1996. *Marketing research: An applied research*. New York: McGraw-Hill.
- Kivela, J., Reece, J. and Inbakaran, R. 1999. Consumer research in the restaurant environment. Part 2: Research design and analytical methods. *International Journal of Contemporary Hospitality Management* 11: 269–286.
- Krewinkel, A., Sünkler, S., Lewandowski, D., Finck, N., Tölg, B., Kroh, L.W., Schreiber, G.A. and Fritzsche, J. 2016. Concept for automated computer-aided identification and evaluation of potentially non-compliant food products traded via electronic commerce. *Food Control* 61: 204–212.
- La Scalia, G., Settanni, L., Micale, R. and Enea, M. 2016. Predictive shelf life model based on RF technology for improving the management of food supply chain: A case study. *International Journal of RF Technologies* 7(1): 31–42.
- Lee, D. and Hosanagar, K. 2016. When do recommender systems work the best?: The moderating effects of product attributes and consumer reviews on recommender performance. *Proceedings of the 25th International Conference on World Wide Web*, International World Wide Web Conferences Steering Committee, 85–97.
- Lee, H.-C., Chang, C.-T., Cheng, Z.-H. and Chen, Y.-T. 2018. Will an organic label always increase food consumption? It depends on food type and consumer differences in health locus of control. *Food Quality and Preference* 63: 88–96.
- Lee, H.-J. and Yun, Z.-S. 2015. Consumers' perceptions of organic food attributes and cognitive and affective attitudes as determinants of their purchase intentions toward organic food. *Food Quality and Preference* 39: 259–267.
- Lee, Y., Kim, J., Lee, I. and Kim, H. 2002. A cross-cultural study on the value structure of mobile internet usage: Comparison between Korea and Japan. *Journal of Electronic Commerce Research* 3(4): 227–239.
- Lewis, B.R. 1991. Service quality: an international comparison of bank customers' expectations and perceptions. *Journal of Marketing Management* 7(1): 47–62.
- Loeb, M.R., Marcus, S., Vogel, R.I. and McCabe, E.J. 2016. System and method of electronically incentivizing healthy food purchasing. *US Patent* 20(160): 063, 532.

- Louw, A., Jordaan, D., Ndanga, L. and Kirsten, J.F. 2008. Alternative marketing options for small-scale farmers in the wake of changing agri-food supply chains in South Africa. *Agrekon* 47(3): 287–308.
- Maehle, N., Iversen, N., Hem, L. and Otnes, C. 2015. Exploring consumer preferences for hedonic and utilitarian food attributes. *British Food Journal* 117: 3039–3063.
- Magnusson, M.K., Arvola, A., Koivisto Hursti, U.-K., Åberg, L. and Sjöden, P.-O. 2001. Attitudes towards organic foods among Swedish consumers. *British Food Journal* 103: 209–227.
- Makanyeza, C. and Du Toit, F. 2016. Factors influencing consumers' choice of imported poultry meat products in a developing market: lessons from Zimbabwe. *Agrekon* 55(3): 191–215.
- Marr, N.E. and Prendergast, G.P. 1993. Consumer adoption of self-service technologies in retail banking: is expert opinion supported by consumer research? *International Journal of Bank Marketing* 11(1): 3–10.
- Mathwick, C., Malhotra, N. and Rigdon, E. 2001. Experiential value: Conceptualization, measurement and application in the catalog and Internet shopping environment. *Journal of Retailing* 77(1): 39–56.
- Mattila-Sandholm, T., Myllärinen, P., Crittenden, R., Mogensen, G., Fondén, R. and Saarela, M. 2002. Technological challenges for future probiotic foods. *International Dairy Journal* 12(2): 173–182.
- McDonald, K. 2015. *Food safety concerns regarding the consumption and sale of unpasteurized milk in Ireland*. 2015 Annual Meeting, 25–28 July 2015. International Association for Food Protection.
- Mishra, D., Akman, I. and Mishra, A. 2014. Theory of reasoned action application for green information technology acceptance. *Computers in Human Behaviour* 36: 29–40.
- Mohseni, S., Jayashree, S., Rezaei, S., Kasim, A. and Okumus, F. 2018. Attracting tourists to travel companies' websites: The structural relationship between website brand, personal value, shopping experience, perceived risk and purchase intention. *Current Issues in Tourism* 21(6): 616–645.
- Mungai, E.A., Behraves, C.B. and Gould, L.H. 2015. Increased outbreaks associated with nonpasteurized milk, United States, 2007–2012. *Emerging Infectious Diseases* 21(1): 119–122.
- Oh, J.Y.-J., Cheng, C.-K., Lehto, X.Y. and O'Leary, J.T. 2004. Predictors of tourists' shopping behaviour: Examination of socio-demographic characteristics and trip typologies. *Journal of Vacation Marketing* 10(4): 308–319.
- Overby, J.W. and Lee, E.-J. 2006. The effects of utilitarian and hedonic online shopping value on consumer preference and intentions. *Journal of Business Research* 59(10): 1160–1166.
- Paul, J., Modi, A. and Patel, J. 2016. Predicting green product consumption using theory of planned behaviour and reasoned action. *Journal of Retailing and Consumer Services* 29: 123–134.
- Perner, L. 2010. Consumer behaviour: The psychology of marketing. Retrieved October 2: 2010.
- Porter, C.E. and Donthu, N. 2006. Using the technology acceptance model to explain how attitudes determine Internet usage: The role of perceived access barriers and demographics. *Journal of Business Research* 59(9): 999–1007.
- Prebensen, N.K. and Rosengren, S. 2016. Experience value as a function of hedonic and utilitarian dominant services. *International Journal of Contemporary Hospitality Management* 28(1): 113–135.
- Pritchard, M.P., Havitz, M.E. and Howard, D.R. 1999. Analyzing the commitment-loyalty link in service contexts. *Journal of the Academy of Marketing Science* 27(3): 333–348.
- Ryu, K., Han, H. and Jang, S. 2010. Relationships among hedonic and utilitarian values, satisfaction and behavioural intentions in the fast-casual restaurant industry. *International Journal of Contemporary Hospitality Management* 22(3): 416–432.
- Scarpi, D. 2012. Work and fun on the internet: the effects of utilitarianism and hedonism online. *Journal of Interactive Marketing* 26(1): 53–67.
- Schade, M., Hegner, S., Horstmann, F. and Brinkmann, N. 2016. The impact of attitude functions on luxury brand consumption: An age-based group comparison. *Journal of Business Research* 69(1): 314–322.
- Schiffman, L.G. and Kanuk, L.L. 2010. *Consumer behaviour*. 10th edn. New York: Prentice Hall.
- Schouteten, J.J., De Steur, H., De Pelsmaeker, S., Lagast, S., De Bourdeaudhuij, I. and Gellynck, X. 2015. Impact of health labels on flavor perception and emotional profiling: A consumer study on cheese. *Nutrients* 7(12): 10251–10268.
- Seegebarth, B., Behrens, S.H., Klarmann, C., Hennigs, N., Scribner, L.L. and Griffith, C. 2016. Customer value perception of organic food: Cultural differences and cross-national segments. *British Food Journal* 118(2).
- Shirdastian, H. and Laroche, M. 2017. Motivations for shopping channel preferences and purchase intentions: The moderating role of involvement (a structured abstract). In *Creating marketing magic and innovative future marketing trends*. New York: Springer, 705–712.
- Sikawa, G. and Mugisha, J. 2011. *Factors influencing south-western Uganda dairy farmers' choice of the milk marketing channel: A case study of Kiriuhura district south western Uganda*. Moshi University College of Cooperative and Business Studies.
- Su, H., Qian, D., Fang, F. and Yu, K. 2013. *Empirical study of hedonic and utilitarian attitudes toward network consumption*. International Academic Workshop on Social Science (IAW-SC-13). Paris: Atlantis Press.
- Teo, T.S. 2001. Demographic and motivation variables associated with Internet usage activities. *Internet Research* 11(2): 125–137.
- Thammawimutti, A. and Chaipoopirutana, P.D.S. 2018. The relationship between brand equity, product attributes and purchase intention: A study of Sony digital cameras in Bangkok. *AU Journal of Management* 3: 5–10.

- To, P.-L., Liao, C. and Lin, T.-H. 2007. Shopping motivations on Internet: A study based on utilitarian and hedonic value. *Technovation* 27(1): 774–787.
- Vainio, A., Niva, M., Jallinoja, P. and Latvala, T. 2015. *From beef to beans: Eating motives and the replacement of animal proteins with plant proteins among the Finnish consumers*. 143rd Joint EAAE/AAEA Seminar, 25–27 March 2015, Naples, Italy. European Association of Agricultural Economists.
- Venkatesh, V. 2000. Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research* 11(4): 342–365.
- Verbeke, W. 2011. Consumer attitudes and communication challenges for agro-food technologies. *Agro-Food Industry Hi-Tech* 22: 34–36.
- Verbeke, W., Marcu, A., Rutsaert, P., Gaspar, R., Seibt, B., Fletcher, D. and Barnett, J. 2015. “Would you eat cultured meat?”: Consumers’ reactions and attitude formation in Belgium, Portugal and the United Kingdom. *Meat science* 102: 49–58.
- Vermeir, I. and Verbeke, W. 2006. Sustainable food consumption: Exploring the consumer “attitude–behavioural intention” gap. *Journal of Agricultural and Environmental Ethics* 19(2): 169–194.
- Voss, K.E., Spangenberg, E.R. and Grohmann, B. 2003. Measuring the hedonic and utilitarian dimensions of consumer attitude. *Journal of marketing Research* 40(3): 310–320.
- Wang, O., De Steur, H., Gellynck, X. and Verbeke, W. 2015. Motives for consumer choice of traditional food and European food in mainland China. *Appetite* 87: 143–151.
- Wold, H. 1980. Model construction and evaluation when theoretical knowledge is scarce: Theory and application of partial least squares. *Evaluation of econometric models*. Elsevier. 47–74
- Woodruff, R.B. 1997. Customer value: The next source for competitive advantage. *Journal of the Academy of Marketing Science* 25(2): 139.
- Wu, W.-Y. and Ke, C.-C. 2015. An online shopping behaviour model integrating personality traits, perceived risk, and technology acceptance. *Social Behaviour and Personality* 43(1): 85–97.
- Yadav, R. and Pathak, G.S. 2016. Young consumers’ intention towards buying green products in a developing nation: Extending the theory of planned behaviour. *Journal of Cleaner Production* 135: 732–739.
- Yang, K. and Lee, H.-J. 2010. Gender differences in using mobile data services: Utilitarian and hedonic value approaches. *Journal of Research in Interactive Marketing* 4(2): 142–156.
- Yeo, V.C.S., Goh, S.-K. and Rezaei, S. 2017. Consumer experiences, attitude and behavioural intention toward online food delivery (OFD) services. *Journal of Retailing and Consumer Services* 35: 150–162.
- Young, W., Hwang, K., McDonald, S. and Oates, C.J. 2010. Sustainable consumption: Green consumer behaviour when purchasing products. *Sustainable development* 18(1): 20–31.
- Yuliawardani, R. and Warsono, S. 2012. A cross-cultural study on the value structure of mobile Internet usage: Comparison between Indonesia and Japan. *Journal of Indonesian Economy and Business* 27: 355.
- Zeithaml, V.A. 1988. Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing* 52(3): 2–22.
- Zheng, Z. 2014. Ingredient technology for food preservation. *Industrial Biotechnology* 10(1): 28–33.

Appendix A: Questionnaire

QUESTIONNAIRE ON MILK ATM
New food (milk) supply Technology

RESP. nr:

Please, read carefully the following title before you answer the question below for this academic purpose "Would you purchase milk from a milk ATM? Consumers' utilitarian and hedonic attitudes as key determinants for preference and purchase intentions

Section 1

Respondent's profile			
Q1	<i>Please indicate your gender</i>	Q2	<i>What is your age?</i>
	<input type="checkbox"/> Female		<input type="checkbox"/> 18-36
	<input type="checkbox"/> Male		<input type="checkbox"/> 37-54
			<input type="checkbox"/> >55
Q3	<i>What is your level of Education?</i>	Q4	<i>Please indicate your occupation</i>
	<input type="checkbox"/> Primary		<input type="checkbox"/> Self-employed
	<input type="checkbox"/> Secondary		<input type="checkbox"/> Civil employee
	<input type="checkbox"/> Vocational education		<input type="checkbox"/> Student
	<input type="checkbox"/> University		<input type="checkbox"/> Private sector
Q5	<i>Please indicate your income level</i>		
	<input type="checkbox"/> Low		
	<input type="checkbox"/> Average		
	<input type="checkbox"/> High		

Notes: Low= 150\$-250\$ per month, Average=250\$-350\$, High=350\$-450\$

Section 2

Q1		To what extent do you agree or disagree with the following statements?				
	Utilitarian attitude	Strongly disagree		Neither agree nor disagree		Strongly agree
Q1a	I purchase milk from milk ATM because it is safe	1	2	3	4	5
Q1b	Milk sold at this milk ATM is of good quality	1	2	3	4	5
Q1c	I save time if I purchase milk from the milk ATM	1	2	3	4	5
Q1d	Milk sold at milk ATM is affordable	1	2	3	4	5
Q1e	Milk sold at milk ATM offer economic value	1	2	3	4	5
Q1f	This milk at milk ATM is ever fresh	1	2	3	4	5
Q1g	It is convenient to purchase milk from Milk ATM	1	2	3	4	5
Q2		<i>To what extent do you agree or disagree with the following statements?</i>				
		Hedonic attitude				
Q2a	It is fun making a purchase at milk ATM	1	2	3	4	5
Q2b	It is exciting buying milk from milk ATM	1	2	3	4	5
Q2c	It is necessary to buy milk from milk ATM	1	2	3	4	5
Q2d	Am delightful to buy milk from milk ATM	1	2	3	4	5
Q2e	It is a solution to milk quality concerns buying milk from milk ATM (usefulness)	1	2	3	4	5
Q2f	It is easy to buy milk from milk ATM	1	2	3	4	5
Q3		<i>To what extent do you agree or disagree with the following statements?</i>				
		Preferences				
Q3a	The first choice to buy milk is at Milk ATM	1	2	3	4	5
Q3b	I prefer buying milk from milk ATM	1	2	3	4	5
Q3c	Milk ATM is a primary source for fresh milk	1	2	3	4	5
Q3d	I recommend family and friends	1	2	3	4	5
Q4		<i>To what extent do you agree or disagree with the following statements?</i>				
		Purchase intentions				
Q4a	I will buy milk from milk ATM in the future	1	2	3	4	5
Q4b	I intend to continue buying from milk ATM	1	2	3	4	5
Q4c	I consider myself to be a loyal customer	1	2	3	4	5
Q4d	I have a positive attitude toward milk ATM	1	2	3	4	5