

## **PAY NOW OR PAY LATER: A CROSS-CULTURAL PERSPECTIVE ON ONLINE PAYMENTS**

Patrick Deufel  
RWTH Aachen University  
Kackertstr. 7, 52072 Aachen, Germany  
[deufel@time.rwth-aachen.de](mailto:deufel@time.rwth-aachen.de)

Dr. Jan Kemper  
RWTH Aachen University  
Kackertstr. 7, 52072 Aachen, Germany  
[kemper@win.rwth-aachen.de](mailto:kemper@win.rwth-aachen.de)

Prof. Malte Brettel  
RWTH Aachen University  
Kackertstr. 7, 52072 Aachen, Germany  
[brettel@time.rwth-aachen.de](mailto:brettel@time.rwth-aachen.de)

### **ABSTRACT**

Consumers have the choice between different payment methods when shopping. Previous research has shown that the payment choice has a strong influence on customer behavior. However, little is known about international differences regarding payment method selection. We fill this gap by comparing adoption of online payment methods across countries and demographics. Our conceptual framework develops on Hofstede's cultural dimensions to explain these payment differences. The analysis is based on 140,000 actual online purchases from an international fashion online store across 14 European countries. Results show that culture explains the differences well and has a much higher impact on consumer choice than demographics. International marketing managers at online retailers can use our findings to decide in which countries to introduce payment methods in demand.

Keywords: E-commerce; Cross-culture; Consumer behavior; Retail payments

### **1. Introduction**

Across the globe, consumers transact millions of non-cash retail payments every minute [A.T. Kearney 2013]. Payment is not only the final step of the customer journey, but a delicate topic as it involves two valuable assets the customer has: sensitive payment information and money. Therefore, merchants offer different payment methods (credit card, PayPal, deferred payment via invoice, etc.) where the customers can choose from. Interestingly, these payment choices differ strongly across countries. Whereas in the United States the majority (72 %) of surveyed consumers prefer to pay via debit or credit card [TSYS 2016b, p. 16], the payment landscape across Europe is scattered [PostNord 2016]. Depending on country, people prefer to pay via debit or credit card, PayPal, cash on delivery, installments, per invoice via deferred online bank transfer, or with specialized e-wallet-based mobile payments. In Denmark, for example, 76 % of respondents said that they regularly use a mobile payment app called 'MobilePay' [Statista 2017], whereas mobile payments are unpopular in other countries.

The difference in payment method adoption across countries is important for practitioners and academics alike for two reasons: On the one hand, it hinders the formation of a common market, while on the other influencing how customers behave in terms of spending volume [Soman 2001], product perception [Shah et al. 2016], etc..

Generally speaking, digital technology is moving markets closer together. Nonetheless, the formation of a single digital market in Europe is far from complete [European Commission 2015]. A single retail payment market would "drive competition and innovation and thus bring better services for end users" [European Central Bank 2013, p. 5]. Customers currently face unfamiliar payment methods when buying on foreign shops and international merchants face complexity in managing their payment systems. All this also makes cross-border trade more difficult and hinders optimal capital allocation. Convergence of payments would facilitate the movement of goods. EU legislators see payments as one lever to overcome national barriers for goods and services. The Single Euro Payments Area (SEPA) initiative together with the Payment Service Directive (PSD), are two concrete examples.

Consumers act differently depending on how they pay. Hirschman (1979) laid the foundation for a whole research stream by observing that the propensity to spend increases if payment via credit card is offered compared to cash in an otherwise identical setting. Prelec & Loewenstein (1998) as well as Soman (2001) later attributed these findings to pain of payment and mental accounting literature, respectively. If we know that payment choices change consumer behavior, it must be of interest how consumers choose in the first place.

Past research has analyzed the shift *within* countries towards electronic payments. See Koulayev et al. (2016) for a recent US example. This shift has been attributed to demographic characteristics (esp. income), availability of new payment instruments, but also to consumers' sense of security. However, to our knowledge there is no answer to the question of payment method adoption *across* countries yet.

Culture is a classic explanation for different behavior of individuals across countries. Consumer culture theory offers perspectives that “address the dynamic relationships between consumer actions, the marketplace, and cultural meaning” [Arnould & Thompson 2005, p. 868]. Next to culture as informal institution, usually other institutional differences like political stability or economic success are taken into consideration in such studies [Holmes et al. 2011]. The purpose of the study is to explain the cause of these international payment differences via cultural dimensions and demographics. What are the most important cultural factors on national level that influence customers' payment choice?

The contribution of this paper is threefold. First, we look for cultural explanations behind the (slow) convergence of online retail payments in Europe, recently measured by Martikainen, Schmiedel, & Takalo (2015). In their analysis, they describe the convergence and link it to political or economic events – like the introduction of a single currency or the financial crisis. Yet, no explanations linked to the individual decision-maker (i.e., consumer) or national culture was provided. We close this gap by looking at customer demographics and cultural values that prevail in the respective market. While doing so, we control for national differences beyond culture (GDP, corruption perception, among others) as proposed by Tsui, Nifadkar, & Ou (2007).

Second, we have actual transaction data whereas most cross-culture studies so far have been questionnaire based [Tsui, Nifadkar, & Ou 2007]. Self-report in the form of questionnaires is context-depending and makes comparison across cultural cohorts difficult [Schwarz 2011]. Access to data has been cited as a main obstacle to perform these kinds of analyses [Kahn & Roberds 2009, p. 17]. We managed to overcome this challenge through exclusive research collaboration with a leading European online fashion retailer. Moreover, by observing customer behavior in a real-life setting increases the external validity of the findings.

Third, to our knowledge, we are the first ones to compare not only cash vs. card, but also online payments across countries, a steadily growing segment. Implications of past studies may not be relevant any more in the light of new technology. We are testing this at the example of online shopping and the respective payment methods. Cash is increasingly being substituted with electronic payment forms, currently estimated to grow 8 % annually [A.T. Kearney 2013, p. 3]. In the markets we observe, choosing from three to five different payment methods is standard. They all differ in terms of security, convenience, transparency and deferment (see Tables 2 and 3).

## 2. Theoretical Background and Literature Review

### 2.1. Retail Payments

How people pay has intrigued many researchers in the past couple of years. The underlying principles and theoretic models go back to the theory of transaction demand for money [Baumol 1952; Tobin 1956] and the economics of two-sided markets [Rochet & Tirole 2002]. The theory of transaction demand for money [Baumol 1952; Tobin 1956] formulates the tradeoff between liquidity and (foregone) return. Less liquid assets usually yield higher returns – compare cash holdings to investments in bonds. This tradeoff is implicitly assessed when choosing a payment method, as they differ by time of cash-flow and imply different (opportunity) costs for the payor. The merchant captures the money usually after one day when payment is processed via a debit card, whereas for invoice payments (via deferred online bank transfer) the payment target is 14 days.

Most markets with network externalities (e.g., software, portals, payment systems) are two-sided, that means supply and demand simultaneously influence each other [Rochet & Tirole 2006]. Both sides of the market benefit from its existence and are necessary for it to work. However, one side of the market might be more important to the platform provider and thus is charged less (or nothing at all) for the usage of such. In the case of payment systems, it usually is the merchant who bears the transaction costs – and these differ substantially by payment method [Grüschow, Kemper, & Brettel 2015].

Klee (2008) tries to “close the gap between the work of empirical researchers in payment choice and theoretical modelers of monetary economics” by regressing payment method characteristics on choice with grocery store transaction data. Wang & Wolman (2016) extend this work with an impressive sample of over 2 billion retail transactions. However, both publications only consider offline purchases. Yet online payments are different mainly

for two reasons. First, different payment methods are available online and the merchant can actively steer the payment method offering that is presented to the customer based on risk and profitability KPIs (e.g., age, shipping address, discounts). Second, customers are more sensitive online when it comes to payments, as it is easier to abandon a website than walking away from the cashier at a brick-and-mortar store. The "online purchase decision-making is a dynamic and highly flexible process" [Karimi, Papamichail, & Holland 2015, p. 138] and so is the embedded payment method choice [Grüschow, Kemper, & Brettel 2015]. Culture has been identified as environmental influence on this decision process [Darley, Blankson, & Luethge 2010].

To date, most publications have focused on payment adoption resulting from individual differences like demographics (esp. income), availability of new payment instruments, or to the consumers' sense of security. Retail payment publications comparing nations are rare and only include few countries – for example, three in the case of Straub, Keil, & Brenner (1997). Humphrey, Pulley, & Vesala (1996) is another example, worth revisiting over 20 years later in an age of online payments. Martikainen, Schmiedel, & Takalo (2015) consider multiple countries in their analysis of payment method convergence but do not include culture as explanatory variable. A study by Kosse & Jansen (2013) has shown that payment habits change slowly. People moving from one country to another stick to the payment habits formed in their respective home countries. However, that does not explain the different levels across nations per se. We would thus like to contribute here by explaining the differences in online payment method choice of consumers across 14 countries.

## 2.2. Cultural Dimensions

Cross-cultural research looks at "individual behavior [...] in which national cultural characteristics play a major role as independent or moderating variables" [Tsui, Nifadkar, & Ou 2007]. Culture is interpreted as informal institutions "which reflect the collective meanings and understandings shared by its inhabitants" [Holmes et al. 2011, p. 533]. Many influencing factors on culture and consumer behavior have been studied. For example, culture has been identified as antecedent of different levels of innovation and decision-making. Consumers in "individualistic" and more "masculine" countries tended to be more innovative in a study conducted by Steenkamp, ter Hofstede, and Wedel (1999). In another study, East Asians tended to compromise more when making decisions compared to Americans [Briley, Morris, & Simonson 2000]. Together with the technology acceptance model (TAM), cultural dimensions have also been used to explain adoption of innovations like e-commerce [Ashraf & Auh 2014] or e-mail [Straub, Keil, & Brenner 1997].

It is common practice in literature to quantify culture across different dimensions. The best known example for cultural dimensions goes back to Hofstede (1980). He defines culture as "the collective programming of the mind distinguishing the members of one group or category of people from others". Initially four dimensions were the output of a survey – power distance, individualism, masculinity, and uncertainty avoidance. Later two additional dimensions were added: long-term orientation and indulgence.

The first dimension – power distance – "expresses the degree to which the less powerful members of a society accept and expect that power is distributed unequally". Second, societies that score low on individualism (and thus high on collectivism) prefer "a tightly-knit framework in society in which individuals can expect their relatives or members of a particular ingroup to look after them in exchange for unquestioning loyalty". "Masculine" societies look for achievement, heroism, assertiveness, and material rewards for success. A masculine society at large is more competitive. "Its opposite, femininity, stands for a preference for cooperation, modesty, caring for the weak and quality of life. [The feminine society at large] is more consensus-oriented."

The uncertainty avoidance dimension stands for the "degree to which the members of a society feel uncomfortable with uncertainty and ambiguity". "Countries exhibiting strong uncertainty avoidance maintain rigid codes of belief and behavior, and are intolerant of unorthodox behavior and ideas". Countries with low scores on long-term orientation prefer to "maintain time-honored traditions and norms while viewing societal change with suspicion". On the other hand, those that score high take a more pragmatic approach: "they encourage thrift and efforts in modern education as a way to prepare for the future". Basically, this dimension splits countries into (short-term) normative versus (long-term) pragmatic nations. Finally, indulgence "stands for a society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun" [Hofstede 2017].

Based on the four original Hofstede scores, Straub, Keil, & Brenner (1997) developed a meta score called Computer-based Media Support Index (CMSI) which is calculated as:  $CMSI = uncertainty\ avoidance + power\ distance + masculinity + 100 - individualism$ .

The lower the score, the more supportive people are towards technology adoption. The original example served as explanation for the initially low email adoption in Japan [Straub, Keil, & Brenner 1997]. Many extended versions have been published since the publication of Hofstede's dimensions. Most notably, the Global Leadership and Organizational Behavior Effectiveness (GLOBE) project [House 2004] collected data from about 17,000 managers to

explain leadership behavior in organizations. Even though the approach and audience is different, the dimensions still correlate with Hofstede’s [Hofstede 2006].

### 3. Conceptual Framework and Hypotheses Development

Our conceptual framework provides a means to explain how different cultural dimensions relate to consumers’ payment method choice. The central principal of our framework is the premise that consumers choose differently, in an otherwise identical situation (same online shop layout, same items, same payment methods offered, etc.), depending on the culture they live in [Kemper & Deufel 2018]. Similar frameworks that link cultural factors to consumer behavior in different settings are often observed in international marketing literature [Gupta, Pansari, & Kumar 2018; Kumar & Pansari 2016].

Hofstede's cultural dimensions have been heavily used to study cross-cultural consumer differences – also in e-commerce [Pavlou & Chai 2002]. After reviewing 25 years of application, Kirkman, Lowe, & Gibson (2006, p. 308) conclude that Hofstede’s dimensions are still “clearly relevant for additional cross-cultural research”. Even though his cultural dimensions were primarily developed to test behavior in organizations – not of consumer behavior – external validity of cultural dimensions has been shown before [Steenkamp, ter Hofstede, & Wedel 1999; Straub, Keil, & Brenner 1997]. Therefore, we expect them to be applicable to payments as well. Other cultural constructs like Hall's (1989) high and low-context communication or Triandis' (1998) individualism vs. collectivism are either not defined for all countries in our sample or overlap with Hofstede's.

Taras, Steel, & Kirkman (2012) have included several political and economic indicators into their cross-cultural studies, such as GDP, the Human Development Index (HDI), Gini coefficient, Corruption Perception Index and the unemployment rate. They use these institutional indicators as control variables for their meta-analysis of Hofstede’s original dimensions. This use case also makes sense for our study of cultural differences among payment method choices. For an illustration of our conceptual framework and mapped hypotheses, refer to Figure 1.

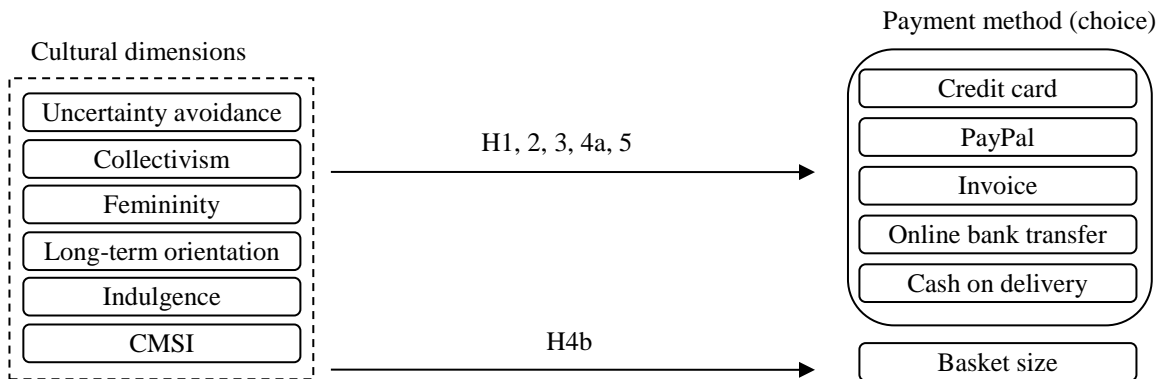


Figure 1: Conceptual framework with respective hypotheses

At the core of all our hypotheses lies the idea that the variance in national cultural dimensions cascades down as an indicator for different individual payment choices. For example, if people have a rather low risk attitude they externalize this via their behavior. One means of expressing this is selecting a safer payment option when shopping online. Previous work confirms the relationship between subjective norm and behavioral intention [Srite & Karahanna 2006]. On one hand, invoicing was perceived as the most secure payment method (from a consumer view) in a survey that we conducted among 2,500 customers. On the other, risk attitude is collectively captured via Hofstede’s uncertainty avoidance score. The uncertainty avoidance dimension stands for the “degree to which the members of a society feel uncomfortable with uncertainty and ambiguity”. “Countries exhibiting strong uncertainty avoidance maintain rigid codes of belief and behavior, and are intolerant of unorthodox behavior and ideas” [Hofstede 2017]. Alshare & Mousa (2014) confirm how the behavioral intention to use a new technological device is influenced by the uncertainty avoidance dimension. We therefore assume that:

**H1:** *Consumers in nations with high uncertainty avoidance scores are more likely to choose payments perceived as secure (i.e., invoice).*

Perceived ease of use (PEOU) is a construct established as part of the technology acceptance model [Davis 1989]. This construct can be paraphrased with terms like "convenient," "controllable," "easy," and "unburdensome" [Davis

1989, p. 322]. In general, PEOU has a strong influence on technology adoption: the more convenient a technology is perceived, the more likely users will use it [Davis 1989; Venkatesh & Davis 2000]. We are interested how this relationship develops in the context of feminine vs. masculine societies. Gupta, Pansari, & Kumar (2018) find that “customers from highly masculine societies tend to report dissatisfaction more often than societies that rate low to moderate on masculinity”. The reason for this could be that societies with high femininity scores seem more empathetic and rather disregard perceived shortcomings [Crotts & Erdmann 2000]. In line with these findings, feminine cultures also tend to be more loyal. Previous studies found a positive relationship between PEOU and behavioral intention in an online shopping context [Smith et al. 2013]. The relationship between convenience and culture has been studied according to the high vs. low context dimension [Hall 1976], but not based on the masculinity vs. femininity dimension. We hypothesize that:

**H2:** *Consumers in nations with high femininity scores are more likely to excuse low convenience payment methods (i.e., more OBT adoption).*

Soman (2003) was the first to distinguish payment methods by how “transparent” they are. Less transparent payments methods are the methods that are decoupled from the goods purchased. For example, cash on delivery is the most transparent payment method, given that the consumer only pays at the doorstep when receiving the goods – in effect, the customer knows exactly what they are paying for. On the other hand, with invoice payments, the customer gets the goods shipped and only after some time triggers the payment. Meanwhile, the first moments of happiness of possessing the good could have worn off. This effect has been studied by Heath and Fennema (1996), which call it “mental depreciation”. The payment is decoupled from the purchase, and thus the less transparent.

Societies that score high on collectivism prefer “a tightly-knit framework in society in which individuals can expect their relatives or members of a particular ingroup to look after them in exchange for unquestioning loyalty” [Hofstede 2017]. On the flip side of the coin, collectivist customers only trust their inner circle compared to institutions [Kumar & Pansari 2016]. van Hoorn (2015) also finds that collectivist cultures tend to have less trust in transactions. It has been shown that trust is crucial for the advancement of e-commerce and online banking [Malaquias 2017]. As a result, these customers may opt for more transparency. In order words:

**H3:** *Consumers in nations with high collectivism scores ask for more transparent payment methods (i.e., more OBT adoption).*

Whereas hypotheses H1, H2, and H3 refer to security, convenience and transparency, respectively, another important dimension with payments is time. As mentioned earlier, different payment methods lead to different timing of cash outflow. Invoice payment is the established example of how retailers grant their customers deferred payments – basically a loan without interest. On the other hand, instant online bank transfer (OBT) occurs right after the customer finishes their order. Customers in rather short-term oriented cultures probably are more likely to trade consumption today against consumption tomorrow. This should be observable when choosing payment methods regarding time of cash flow.

A society with high indulgence scores is a “society that allows relatively free gratification of basic and natural human drives related to enjoying life and having fun” [Hofstede 2017]. The indulgence vs. restraint dimension is the most recently added by Hofstede – consequently, less publications refer to it. However, social scientists have extensively studied the relationship between pleasure and happiness, especially in the consumer psychology field [Alba & Williams 2013, p. 7]. Consumers from more indulgent nations may have no problem ordering more and worrying less about (immediate) payment. We hypothesize that:

**H4a:** *Consumers in nations with high indulgence scores use deferred payment methods (like invoice) more often.*

The amount of spending is not only driven by income, even though this is an important factor. Aguiar and Bils (2015), for example, report Engel curve elasticities of 1.09–1.19 for shoes and other apparel. Nevertheless, many other factors affect the spending level, like credit lines [Soman & Cheema 2002]. Rick, Cryder, & Loewenstein (2008) found that some consumers experience more pain when purchasing goods than others (they label them “tightwads”). Societies that score high on indulgence score have no problem with free gratification and enjoying life. We hypothesize that this reflects not only on the way of consuming but also the amount in terms of basket size, meaning:

**H4b:** *Consumers in nations with high indulgence score have larger basket sizes.*

Relating CMSI score to digital innovations has been done before in the case of emails [Straub, Keil, & Brenner 1997] and e-commerce [Ashraf & Auh 2014]. In both cases, countries with low CMSI scores adopted innovations more. We would like to test this relationship with online payment choice. Payment methods differ from each other in terms of novelty and digital (or “computer-based media”) involvement. Credit cards for example, have been used for longer time and need less digital involvement compared to PayPal or invoice payments. Invoicing is not a new invention, per se [Niall Ferguson 2008]. However, it is a relatively new introduction to the B2C context in certain countries. In the UK, for instance, invoice payments are non-existent [British Retail Consortium 2017], whereas in German-speaking countries invoice payments are well established [The Paypers 2017]. Thus, we hypothesize that:

**H5:** *Consumers in nations with low CMSI scores adopt newly emerging payment methods (i.e., online invoice) stronger compared to other countries.*

#### 4. Data and Research Methodology

##### 4.1. Data

The dataset that we used for this study consists of three parts: order transaction data (including customer information), cultural dimension data, and macro-economic data. Order data are on an individual level, whereas culture and economic data a country level.

We were fortunate to obtain proprietary order transaction data from a European fashion retailer through collaborative research. The company is active in 14 European countries, allowing for a comprehensive cross-cultural comparison. Figure 2 shows a map of countries included in this study (Spain, France, United Kingdom, Belgium, Netherlands, Italy, Switzerland, Germany, Austria, Poland, Denmark, Norway, Sweden, Finland).



Figure 2: Countries included in this study

Not all 14 countries have an equal volume of orders per year. To end up with equally distributed order amounts in each country, we took random samples of 10,000 orders each. In total, these summed up to around 140,000 orders between April 2016 and April 2017. For each order, we had information on the chosen payment method, basket size (all converted to EUR) as well as the customer's age, gender, and whether it was the customer's first order at the merchant. To our knowledge, the pooled cross-sectional dataset used is unique in its size and timeliness.

The dataset consists of unique customer IDs only (no longitudinal data). We only considered transactions where the customer could choose from the full payment spectrum offered at the merchant. This was not always the case because of risk steering (e.g., customers with bad solvency score are usually denied invoice payment). We can only causally relate customer decisions to external variables in the cases of full payment choice: Otherwise, the customer's decision would be endogenous in the merchant's decision to restrict the payment offering. Nevertheless, a full payment method spectrum was offered in more than 80 % of orders. This means that the setting described in this article is rather the norm than the exception and hence the results generalizable.

Due to the diversity in the payment landscape (which we aim to explore), not all of the five payment methods that merchants generally provide (credit card, PayPal, invoice, online bank transfer, cash on delivery) were offered throughout all countries. This was only the case for credit card and PayPal (see Table 1).

Fortunately, the payment methods under consideration in a respective country were introduced around the same time. The exception to this are OBT in Poland, OBT in Finland, and COD in Spain. Yet, for these exceptions there is less than one year between the launch of these payment methods and the others.

Table 1: Overview of available payment methods per country and introduction year

Country	Credit card	PayPal	Invoice	OBT	COD
Germany	2008	2008	2008		
Netherlands	2010	2010	2010	2010	
France	2010	2010			
Italy	2011	2011			2011
UK	2011	2011			
Austria	2009	2009	2009	2009	
Switzerland	2011	2011	2011	2011	
Poland	2012	2012		2013	2012
Belgium	2012	2012	2012		
Sweden	2012	2012	2012		
Finland	2012	2012	2012	2013	
Denmark	2012	2012	2012		
Spain	2012	2012			2013
Norway	2012	2012	2012		

Notes: Shaded cells represent available payment methods to the customer.

In some cases (e.g., IT system breakdown), only pre-payment via online bank transfer were offered to the customer. This represents an inconvenient payment method for the consumer, with respective low adoption rate. We excluded those cases in our analysis for simplicity, given that they represented less than 0.2 % of the sample only.

Regarding cultural dimension data, we used Taras, Steel, & Kirkman (2012) meta-dimensions (where available) instead of Hofstede's original values, given that they were more recent and demonstrated more variability across the countries in our sample. This is just a methodological aspect – the theory behind them is the same. For long-term orientation and indulgence we still take Hofstede's most recent values from his website [Hofstede 2017] as Taras, Steel, & Kirkman (2012) did not compute their meta-scores here. We computed the respective CMSI scores ourselves, as described in Straub, Keil, & Brenner (1997). Finally, we standardized all country scores within our sample by subtracting the sample mean and dividing the sample's standard deviation. As we worked with collectivity and femininity scores in our hypotheses, we inverted individualism and masculinity by multiplying them with -1.

Table 2: Cultural dimensions per country (standardized) – based on Hofstede (2017)

Country	Uncert. avoid.	Collectivism	Femininity	Long-term or.	Indulgence	CMSI
Germany	.10	.22	-.82	1.61	-1.01	.35
Netherlands	-.41	-1.09	1.17	.65	.84	-.93
France	1.01	-.18	.06	.41	-.48	.82
Italy	.54	-.68	-.98	.28	-1.66	.69
UK	-1.19	-1.99	-.82	-.32	.90	-.55
Austria	.32	1.43	-1.32	.22	.51	.45
Switzerland	-.20	.12	-.98	1.07	.70	.26
Poland	1.31	.93	-.75	-1.10	-1.73	1.49
Belgium	1.36	-.58	-.36	1.55	.11	1.02
Sweden	-1.45	-.18	1.51	-.20	1.49	-1.47
Finland	-.15	.63	.71	-1.10	.11	-.41
Denmark	-1.71	-.48	1.09	-1.29	.97	-1.66
Spain	1.01	1.84	.10	-.50	-.74	.95
Norway	-.54	.02	1.40	-1.29	-.02	-1.02

#### 4.2. Research Methodology

The dependent variable of the model was the observed payment choice of the consumer for a respective online order. However, with each payment choice the consumer also revealed a preference with regards to attributes the chosen payment method has.

When it comes to payment method classification and taxonomy we rely on previous research as well as our own customer survey (for a subsample). To compare different payment methods, Hirschman (1982) was one of the first to introduce payment characteristics like transaction time (i.e., speed), transfer time (i.e., deferment), security, or control spending. Soman (2003) introduced a more subjective dimension, transparency, which turned out to have an important

influence on a consumer’s spending behavior [Shah et al. 2016]. Hedman et al. (2017) further classified these different payment method characteristics into a “4P taxonomy” (purchase, personal, payment instrument, physical technology).

In our article, we focus on the personal and payment instrument dimensions. Thereby we classify the payment methods at hand into security, convenience, transparency, and deferment. These dimensions can also be found in previous work that differentiates payment methods [Koulayev et al. 2016; Schuh & Stavins 2010]. Their work builds on an extensive US survey [Federal Reserve Bank of Boston 2015]. The first two dimensions in particular (security and convenience) are dependent on subjective customer perception instead of objectively quantifiable metrics. As we extend previous work by including different payment methods, we conducted a similar survey, performed in Germany among a random sample of active customers (Table 3). However, more general surveys in industry reports indicate that payment method attributes are stable across countries (in contrast to payment preferences) [TSYS 2016a, 2016b].

The latter two dimensions (transparency and deferment) are less based on consumer perception and can be derived more objectively. We followed the argumentation of Soman (2003), who introduced the idea of differentiating payment methods by transparency. The payment method classification is summarized in Table 4.

Please note that the classification is from a consumer perspective; the opposite rank is usually true for the retailer. For example, an invoice is regarded as very secure for the customer as the cash flow can only be initiated after they received the goods. The merchant has no means of obtaining the money without the customer initiating payment. This stands in contrast to, for example, credit card payments where the customer has to enter the details the moment the order is completed.

Table 3: Consumer payments survey: convenience vs. risk

Payment method	Very inconv.	Inconvenient	Neither	Convenient	Very conv.	N
Credit card	3%	5%	18%	27%	47%	900
PayPal	2%	1%	7%	15%	74%	1,438
Invoice	1%	2%	6%	12%	79%	2,268
OBT	26%	18%	24%	14%	15%	588
COD	26%	16%	19%	11%	23%	212
	Very unsec.	Unsecure	Neither	Secure	Very secure	
Credit card	4%	9%	26%	30%	29%	897
PayPal	2%	2%	10%	26%	60%	1,432
Invoice	0%	1%	3%	11%	84%	2,259
OBT	14%	18%	20%	18%	27%	583
COD	7%	7%	18%	21%	43%	209

Notes: Convenience and risk assessment of payment methods. Delta to 100 % responded "don't know". Different N because survey participants were able to skip questions.

Table 4: Payment method classification (consumer perspective)

Payment method	Security	Convenience	Transparency	Deferment
Credit card	Secure	Convenient	Transparent	Deferred
PayPal	Very secure	Very convenient	Less transparent	Deferred
Invoice	Most secure	Most convenient	Least transparent	Most deferred
OBT	Least secure	Least convenient	Transparent	Least deferred
COD	Secure	Less convenient	Most transparent	Deferred

Notes: Security and convenience classification via consumer survey, ranking based on top 2 box scoring on 5-point scale (see Table 3). Transparency dimension based on Soman (2003). Deferment refers to time of cash flow.

The control variables that we always include are gender, age, and whether it is an existing customer or not. Including demographics helps ensure sample equivalence; however, this has been often neglected in previous studies, according to Tsui, Nifadkar, & Ou (2007). As we compare customer groups from different populations (nations), the sample should be as equivalent as possible.

Our dependent variables are at the individual level, whereas the independent variables at the group or national level (macro characteristic). This is what Tsui, Nifadkar, & Ou (2007) refer to as "cross-level" study. However, having this in mind, we must be clear to draw conclusions on payment choice and basket size on the individual level only – and not to directly infer results onto group level. Doing so would represent an ecological fallacy, as individuals can deviate from the national measure [Srite & Karahanna 2006]. On the other hand, the “dis-aggregation of a higher-level measure to a lower [individual] level” might violate the independence of data [Tsui, Nifadkar, & Ou 2007, p.



453]. Ideally, we would have had the 140,000 customers fill out the survey on the basis of the cultural dimensions identified by Hofstede and compared the results.

Table 5: Summary statistics

Variable	Min	Max	Mean	Std. dev.	N
Credit card	0	1	.30		139,604
PayPal	0	1	.12		139,604
Invoice	0	1	.40		139,604
Online bank transfer (OBT)	0	1	.07		139,604
Cash on delivery (COD)	0	1	.11		139,604
Basket size	-.91	15.97	.00	1.00	139,604
Uncertainty avoidance	-1.71	1.36	.00	.96	139,604
Collectivism	-1.99	1.84	.00	.96	139,604
Femininity	-1.32	1.51	.00	.96	139,604
Long-term orientation	-1.29	1.61	.00	.96	139,604
Indulgence	-1.73	1.49	.00	.96	139,604
CMSI	-1.66	1.49	.00	.96	139,604
Existing customer	0	1	.77		139,604
Gender (male)	0	1	.24		139,604
Age	-3.37	5.80	.00	1.00	89,822

Notes: All variables standardized (except dummies and percentages)

An advantage of cultural dimension data on the national level is that we can rule out reverse causality: The individual choice while shopping online is unlikely to cause macro-economic or cultural factors to change. This leaves us with one cause less for potential endogeneity (the other two remaining being measurement error and omitted variable bias).

As the payment choice is discrete, we rely on multinomial logistic regression (MNL) as the most common methodological approach in this context [Arango, Huynh, & Sabetti 2015, p. 133]. The multinomial logistic regression model requires one choice alternative as reference level so that it can compare the relative frequencies of the other alternatives against it. This is also why in the model output one alternative is never shown (the reference level). Positive coefficients then mean that the independent variable has a positive relationship (i.e., higher odds) with the event that the respective alternative is chosen compared to the other alternatives. For basket size regressions, linear ordinary least squares were chosen. We operationalized the MNL and OLS regressions in R with the *mlogit* package and *lm*, respectively.

## 5. Results

Cultural factors explain payment choice and basket size well – better than demographics. Most of our hypotheses held, but there were also some surprises (e.g., on indulgence).

Table 6: Results of multinomial logistic regression – payment choice on cultural dimensions

Variable	Credit card	PayPal	OBT	COD
Uncertainty avoidance	-10.94*** (.14)	-9.77*** (.17)	-5.31*** (.16)	-8.38*** (.17)
Collectivism	-3.14*** (.06)	-3.00*** (.06)	-0.28*** (.06)	-2.91*** (.06)
Femininity	3.70*** (.08)	2.71*** (.09)	3.30*** (.10)	1.73*** (.09)
Long-term orientation	-4.44*** (.06)	-3.89*** (.06)	-0.92*** (.05)	-4.66*** (.08)
Indulgence	1.27*** (.03)	0.46*** (.04)	-0.33*** (.03)	-0.37*** (.04)
CMSI	18.16*** (.20)	15.97*** (.23)	8.58*** (.21)	14.47*** (.24)
Basket size	-0.29*** (.01)	-0.26*** (.02)	-0.24*** (.02)	-0.39*** (.03)
Existing customer	0.13*** (.02)	-0.96*** (.02)	-2.06*** (.03)	-1.82*** (.03)
Gender (male)	0.50*** (.03)	0.57*** (.03)	-0.33*** (.04)	-0.19*** (.04)
Age	0.29*** (.01)	0.32*** (.01)	0.29*** (.02)	0.29*** (.02)
Number of observations	89,822			

Notes: \*\*\*, \*\*, \* denote significance at the .001, .01, .05 level respectively; Standard errors are in ( ); Invoice taken as reference level; OBT = online bank transfer, COD = cash on delivery

All cultural dimensions have significant explanatory power regarding customers' payment method choice (Table 6). Uncertainty avoidance (negative effect) and CMSI (positive effect) have the biggest impact on payment choice. Consumers in nations with high uncertainty avoidance score rather adopt secure invoice payments. The effect sizes are relatively large here: uncertainty avoidance greatly influences the payment choice. Moreover, as expected, consumers in nations with high femininity are more willing to choose rather less convenient payment methods like OBT compared to masculine countries. Hence, H1 and H2 are supported.

Consumers in nations with high collectivism scores prefer deferred payment methods like invoice over other payment methods. In particular, they do not show higher OBT adoption, so H3 is not supported.

When it comes to indulgence scores, consumers in nations with high scores do not seem to use deferred payment methods (like invoice) more often after all; therefore, H4a is not supported. However, the effect size on this dimension is less strong compared to the cultural dimensions mentioned earlier. The indulgence score does not seem to influence the payment decision strongly.

With respect to our hypothesis with basket size, high indulgence scores go in hand with larger basket sizes as expected (+6 % for 1 std. dev.), meaning H4b is supported (Table 7). Finally, nations with low CMSI score adopt new payment methods (i.e., invoice) relatively more (Table 6). Thus, H5 is supported as well.

Table 7: Results of ordinary least squares regression – basket size on cultural dimensions

Variable	log(Basket size)
Intercept	4.27*** (.01)
Uncertainty avoidance	.22*** (.03)
Collectivism	.28*** (.01)
Femininity	-.19*** (.01)
Long-term orientation	.30*** (.01)
Indulgence	.06*** (.00)
CMSI	-.68*** (.04)
Existing customer	.17*** (.01)
Gender (male)	.01 (.01)
Age	-.01*** (.00)
Number of observations	89,822
McFadden R <sup>2</sup>	.10

Notes: \*\*\*, \*\*, \* denote significance at the .001, .01, .05 level respectively; Standard errors are in ( )

The effect sizes regarding demographics (gender and age) are smaller by a factor of 10 compared to cultural dimension coefficients. Interestingly, older male customers prefer invoice payments to all other payment methods. The results are robust when controlling for macro-economic indicators like inflation, HDI, Gini coefficient, and household Internet penetration (not reported here).

## 6. Discussion and Conclusion

This study helps towards understanding the differences in payment method choice (and thus consumer spending) in e-commerce across different countries. We focused on cultural dimensions by leveraging a proprietary dataset with 10,000 transactions for each of the 14 countries studied throughout one year.

### 6.1. Theoretical Implications

Our study findings show that existing theoretical knowledge about payment method adoption from country specific analyses [Schuh & Stavins 2010; Wang & Wolman 2016] hold, yet have to be applied for international comparisons with care. Former explanatory factors like transaction size and payment characteristics are important, but cultural factors play a larger role in explaining the different payment preferences internationally. As shown conceptually by Srite & Karahanna (2006) as well as Ashraf & Auh (2014), technology adoption is moderated by cultural dimensions. The results of our analysis show that payment systems qualify as such a technology.

Culture is a major factor that explains the scattered payment market in Europe. Variance in culture (but also in macro-economics and demographics) go in hand with differences in consumer behavior. Economic factors on national level are second only to cultural dimensions. Especially Hofstede's uncertainty avoidance index and Straub, Keil, & Brenner's CMSI are strong in explanatory magnitude. Interestingly, institutional differences seem to have a larger impact than the individual differences we included in our equations (age, gender, existing customer).

Now, do cultures need to converge so that payment methods converge and form a single European consumer payment market? Probably not. Notwithstanding, the payment method that will prevail must address all cultural needs

of its users. If this precondition is met then convergence is just a matter of time. As we saw, not all cultures will adopt respective payment methods with the same pace.

## 6.2. Managerial Implications

With the results of our work, managers in e-commerce companies thinking about expanding into new markets can anticipate which payment methods will be favored by the customer there. In addition to analysis about competitors' payment offerings, this might be worthy of complementary analysis. The necessary input variables of our equations are easily obtainable. Cultural dimensions have been gathered for more than 100 countries and macro-economic data is publicly available as well. In markets that are already served, merchants could introduce new payment methods to fill current "payment white spots". For example, if in a high uncertainty avoidance scoring country such as Greece or Hungary a payment method perceived as secure – like invoicing – did not exist, then an introduction would be a competitive advantage.

Yet this logic also works the other way around. Payment methods differ in complexity and costs for the merchant [Grüschow, Kemper, & Brettel 2016]. Cash on delivery, for example, needs to be handled by an external provider that collects the money at the customer's doorstep, with several risks and processes involved. On the other hand, online bank transfers are risk and transaction-free for the merchant. If an expensive or inconvenient payment method (from the merchant perspective) is prevalent in country A but not country B with similar cultural dimensions, it might be worth thinking of suspending the payment method in country A. The shop would save costs and complexity, whereas the customer might be as satisfied with another payment method, but just out of habit has not chosen it to date. The fact that payment behavior is "sticky" has already been shown by Kosse & Jansen (2013) as well as Deufel & Kemper (2018).

In a recent field experiment, the merchant has shown that letting the customer choose a payment method instead of preselecting the one they chose most frequently in the past reduces conversion rates by 1 %. Apparently, making the customer aware of payment makes them reevaluate the order. With the results of this study, international marketing managers at online shops have a better understanding of payment preferences in respective countries and may relieve the consumer of one decision.

## 7. Limitations and Areas for Further Research

Of course, this study is not without limitations, and there is potential for extensions. Even though our propriety dataset is of high value, the downside is that the merchant does not offer all payment methods in all countries. Therefore, we cannot fully answer whether the payment mix in a respective country is offering (supply) or adoption (demand) driven [See-to, Tam, & Jaisingh 2007]. For instance, in our sample there was no invoice offered in the countries with corruption perception at the higher end of the scale.

A potential extension of this study would be to compare credit card vs. PayPal payments (via a fractional logit model), as these are offered across all 14 countries. As mentioned in the data section, we used cross-level data for our analysis. That is, cultural dimensions were measured on group level, whereas payment choice at the individual level. To reaffirm the results of our large sample analysis, a case study with a smaller  $N$  could include a survey among a smaller group of customers to get the cultural dimension on individual level as well.

One of the key contributions is access to huge amounts of actual transactions. However, it is rather difficult to address more complicated frameworks and structural equation models (SEM) that rely on latent variables with these large secondary datasets [Shah et al. 2016; Tsui, Nifadkar, & Ou 2007, p. 41]. Surveys are needed to explore these non-observable customer motivations. A potential extension of this study could explore national culture primary data [Srite & Karahanna 2006].

Even though developed economies (like the ones in our sample) make up the majority of the worldwide e-commerce market [Ecommerce Foundation 2017], emerging markets are growing fast and even outpacing developed markets in terms of innovative payment method adoption. For example, payment in China (via WeChat) and Kenya (via M-Pesa) are mostly mobile already [Jack, Ray, & Suri 2013]. Future studies could examine whether there are cultural differences between developing emerging market payment landscapes.

## REFERENCES

- A.T. Kearney, *Winning the Growth Challenge in Payments*, 2013.
- Aguiar, M. and M. Bils, "Has Consumption Inequality Mirrored Income Inequality?," *American Economic Review*, Vol. 105, No. 9:2725–56, 2015.
- Alba, J.W. and E.F. Williams, "Pleasure Principles: A Review of Research on Hedonic Consumption," *Journal of Consumer Psychology*, Vol. 23, No. 1:2–18, 2013.

- Alshare, K. and A. Mousa, "The Moderating Effect of Espoused Cultural Dimensions on Consumer's Intention to Use Mobile Payment Devices," *Proceedings of the 35th International Conference on Information Systems (ICIS)*, 2014.
- Arango, C., K.P. Huynh, and L. Sabetti, "Consumer Payment Choice: Merchant Card Acceptance versus Pricing Incentives," *Journal of Banking and Finance*, Vol. 55:130–41, 2015.
- Arnould, E. and C. Thompson, "Reflections: Consumer Culture Theory - Twenty Years of Research," *Journal of Consumer Research*, Vol. 31, No. 4:868–82, 2005.
- Ashraf, A.R. and S. Auh, "The Application of the Technology Acceptance Model under Different Cultural Contexts: The Case of Online Shopping Adoption," *Journal of International Marketing*, Vol. 22, No. 3:68–93, 2014.
- Baumol, W.J., "The Transactions Demand for Cash: An Inventory Theoretic Approach," *The Quarterly Journal of Economics*, Vol. 66, No. 4:545–56, 1952.
- Briley, D.A., M.W. Morris, and I. Simonson, "Reasons as Carriers of Culture: Dynamic versus Dispositional Models of Cultural Influence on Decision Making," *Journal of Consumer Research*, Vol. 27, No. 2:157–78, 2000.
- British Retail Consortium, *Payments Survey UK*, 2017.
- Crotts, J.C. and R. Erdmann, "Does National Culture Influence Consumers' Evaluation of Travel Services? A Test of Hofstede's Model of Cross-Cultural Differences," *Managing Service Quality*, Vol. 10, No. 6:410–19, 2000.
- Darley, W.K., C. Blankson, and D.J. Luethge, "Toward an Integrated Framework for Online Consumer Behavior and Decision Making Process: A Review," *Psychology and Marketing*, Vol. 27, No. 2:94–116, 2010.
- Davis, F.D., "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly*, Vol. 13, No. 3:319–40, 1989.
- Deufel, P. and J. Kemper, "Online Payment Method Selection: The Habitual Choice of Deferring Payment," in *Proceedings of the 41th International Conference on Information Systems (ICIS)*, 2018.
- Ecommerce Foundation, *Global Ecommerce Report 2017*, 2017.
- European Central Bank, *The Single Euro Payments Area (SEPA)*, 2013.
- European Commission, *A Digital Single Market Strategy for Europe - Analysis and Evidence*, 2015.
- Federal Reserve Bank of Boston, *The 2015 Survey of Consumer Payment Choice (SCPC)*, 2015.
- Grüschow, R., J. Kemper, and M. Brettel, "Do Transaction Costs of Payment Systems Differ across Customers in E-Commerce?," *ECIS 2015*, 2015.
- "How Do Different Payment Methods Deliver Cost and Credit Efficiency in Electronic Commerce?," *Electronic Commerce Research and Applications*, Vol. 18:27–36, 2016.
- Gupta, S., A. Pansari, and V. Kumar, "Global Customer Engagement," *Journal of International Marketing*, Vol. 26, No. 1:4–29, 2018.
- Hall, E.T., *Beyond Culture*, New York: Anchor Books, 1976.
- Heath, C. and M.G. Fennema, "Mental Depreciation and Marginal Decision Making," *Organizational Behavior and Human Decision Processes*, Vol. 68, No. 2:95–108, 1996.
- Hedman, J., F.B. Tan, J. Holst, and M. Kjeldsen, "Taxonomy of Payments: A Repertory Grid Analysis," *International Journal of Bank Marketing*, Vol. 35, No. 1:75–96, 2017.
- Hirschman, E.C., "Consumer Payment Systems: The Relationship of Attribute Structure to Preference and Usage," *Journal of Business*, Vol. 55, No. 4:531–45, 1982.
- Hirschman, E.C., "Differences in Consumer Purchase Behavior by Credit Card Payment System," *Journal of Consumer Research*, Vol. 6, No. 1:58–66, 1979.
- Hofstede, G., *Culture's Consequences: International Differences in Work-Related Values*. Newbury Park: SAGE, 1980.
- "The 6 Dimensions of National Culture," *Hofstede Insights*, July 2, 2017.
- "What Did GLOBE Really Measure? Researchers' Minds versus Respondents' Minds," *Journal of International Business Studies*, Vol. 37, No. 6:882–96, 2006.
- Holmes, R.M., T. Miller, M.A. Hitt, and M.P. Salmador, "The Interrelationships among Informal Institutions, Formal Institutions, and Inward Foreign Direct Investment," *Journal of Management*, Vol. 39, No. 2:531–66, 2011.
- van Hoorn, A., "Individualist–Collectivist Culture and Trust Radius: A Multilevel Approach," *Journal of Cross-Cultural Psychology*, Vol. 46, No. 2:269–76, 2015.
- House, R., *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*. Philadelphia: SAGE, 2004.
- Humphrey, D.B., L.B. Pulley, and J.M. Vesala, "Cash, Paper, and Electronic Payments: A Cross-Country Analysis," *Journal of Money, Credit and Banking*, Vol. 28, No. 4:914–39, 1996.
- Jack, W., A. Ray, and T. Suri, "Transaction Networks: Evidence from Mobile Money in Kenya," in *American Economic Review* 356–61, 2013.

- Kahn, C.M. and W. Roberds, "Why Pay? An Introduction to Payments Economics," *Journal of Financial Intermediation*, Vol. 18, No. 1:1–23, 2009.
- Karimi, S., K.N. Papamichail, and C.P. Holland, "The Effect of Prior Knowledge and Decision-Making Style on the Online Purchase Decision-Making Process: A Typology of Consumer Shopping Behaviour," *Decision Support Systems*, Vol. 77:137–47, 2015.
- Kemper, J. and P. Deufel, "How the Purchase Situation Affects the Payment Method Choice in E-Commerce," *Academy of Management Proceedings*, Vol. 2018, No. 1:11010, 2018.
- Kirkman, B.L., K.B. Lowe, and C.B. Gibson, "A Quarter Century of 'Culture's Consequences': a Review of Empirical Research Incorporating Hofstede's Cultural Values Framework," *Journal of International Business Studies*, Vol. 37, No. 3:285–320, 2006.
- Klee, E., "How People Pay: Evidence from Grocery Store Data," *Journal of Monetary Economics*, Vol. 55, No. 3:526–41, 2008.
- Kosse, A. and D.J. Jansen, "Choosing How to Pay: The Influence of Foreign Backgrounds," *Journal of Banking and Finance*, Vol. 37, No. 3:989–98, 2013.
- Koulayev, S., M. Rysman, S. Schuh, and J. Stavins, "Explaining Adoption and Use of Payment Instruments by US Consumers," *RAND Journal of Economics*, Vol. 47, No. 2:293–325, 2016.
- Kumar, V. and A. Pansari, "National Culture, Economy, and Customer Lifetime Value: Assessing the Relative Impact of the Drivers of Customer Lifetime Value for a Global Retailer," *Journal of International Marketing*, Vol. 24, No. 1:1–21, 2016.
- Malaquias, H., "Mixing Business and Pleasure: Empirical Implications for Trust in Mobile Banking," *Journal of Electronic Commerce Research*, Vol. 18, No. 3:212–24, 2017.
- Martikainen, E., H. Schmiedel, and T. Takalo, "Convergence of European Retail Payments," *Journal of Banking and Finance*, Vol. 50:81–91, 2015.
- Niall Ferguson, *The Ascent of Money: A Financial History of the World* London: Penguin Books, 2008.
- Pavlou, P. and L. Chai, "What Drives Electronic Commerce across Cultures? Across-Cultural Empirical Investigation of the Theory of Planned Behavior.," *Journal of Electronic Commerce Research*, Vol. 3, No. 4:240–53, 2002.
- PostNord, *E-Commerce in Europe 2016*, 2016.
- Prelec, D. and G. Loewenstein, "The Red and the Black: Mental Accounting of Savings and Debt," *Marketing Science*, Vol. 17, No. 1:4–28, 1998.
- Rick, S., C. Cryder, and G. Loewenstein, "Tightwads and Spendthrifts," *Journal of Consumer Research*, Vol. 34, No. 6:767–82, 2008.
- Rochet, J.-C. and J. Tirole, "Cooperation among Competitors: Some Economics of Payment Card Associations," *RAND Journal of Economics*, Vol. 33, No. 4:549–570, 2002.
- "Two-Sided Markets: A Progress Report," *RAND Journal of Economics*, Vol. 37, No. 3:645–67, 2006.
- Schuh, S. and J. Stavins, "Why Are (Some) Consumers (Finally) Writing Fewer Checks? The Role of Payment Characteristics," *Journal of Banking and Finance*, Vol. 34, No. 8:1745–58, 2010.
- Schwarz, N., "Self-Reports in Consumer Research: The Challenge of Comparing Cohorts and Cultures," *Journal of Consumer Research*, Vol. 27, No. 2:267–72, 2011.
- See-to, E.W.K., K.Y. Tam, and J. Jaisingh, "Analysis of Electronic Micro-Payment Market," *Journal of Electronic Commerce Research*, Vol. 8, No. 1:63–83, 2007.
- Shah, A., N. Eisenkraft, J. Bettman, and T. Chartrand, "Paper or Plastic?: How We Pay Influences Post-Transaction Connection," *Journal of Consumer Research*, Vol. 42, No. 5:688–708, 2016.
- Smith, R., G. Deitz, M.B. Royne, J.D. Hansen, M. Grünhagen, and C. Witte, "Cross-Cultural Examination of Online Shopping Behavior: A Comparison of Norway, Germany, and the United States," *Journal of Business Research*, 2013.
- Soman, D., "Effects of Payment Mechanism on Spending Behavior: The Role of Rehearsal and Immediacy of Payments," *Journal of Consumer Research*, Vol. 27, No. 4:460–74, 2001.
- "The Effect of Payment Transparency on Consumption: Quasi-Experiments from the Field," *Marketing Letters*, Vol. 14, No. 3:173–83, 2003.
- Soman, D. and A. Cheema, "The Effect of Credit on Spending Decisions: The Role of the Credit Limit and Credibility," *Marketing Science*, Vol. 21, No. 1:32–53, 2002.
- Srite, M. and E. Karahanna, "The Role of Espoused National Cultural Values in Technology Acceptance," *MIS Quarterly*, Vol. 30, No. 3:679–704, 2006.
- Statista, "Most Popular Mobile Payment Apps in Denmark in 2016," *Digital Payments Survey*, June 29, 2017.
- Steenkamp, J.-B., F. ter Hofstede, and M. Wedel, "A Cross-National Investigation into the Individual and National Cultural Antecedents of Consumer Innovativeness," *Journal of Marketing*, Vol. 63, No. 2:55–69, 1999.

- Straub, D., M. Keil, and W. Brenner, "Testing the Technology Acceptance Model across Cultures: A Three Country Study," *Information & Management*, Vol. 33, No. 1:1–11, 1997.
- Taras, V., P. Steel, and B.L. Kirkman, "Improving National Cultural Indices Using a Longitudinal Meta-Analysis of Hofstede's Dimensions," *Journal of World Business*, Vol. 47, No. 3:329–41, 2012.
- The Paypers, *Online Payments and Ecommerce Market Guide 2017*, 2017.
- Tobin, J., "The Interest-Elasticity of Transactions Demand for Cash," *The Review of Economics and Statistics*, Vol. 38, No. 3:241–47, 1956.
- Tsui, A., S.S. Nifadkar, and Y.A. Ou, "Cross-National, Cross-Cultural Organizational Behavior Research: Advances, Gaps, and Recommendations," *Journal of Management*, Vol. 33, No. 3:426–78, 2007.
- TSYS, 2016 German Consumer Payment Study, 2016a.
- 2016 U.S. Consumer Payment Study, 2016b.
- Venkatesh, V. and F.D. Davis, "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Studies," *Management Science*, Vol. 46, No. 2:186–205, 2000.
- Wang, Z. and A. Wolman, "Payment Choice and Currency Use: Insights from Two Billion Retail Transactions," *Journal of Monetary Economics*, Vol. 84, No. C:94–115, 2016.