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The Cashless Economy from the Perspective of SMEs: Review of Research and Recommended Directions for Future Studies

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ABSTRACT

Objective: The aim of the paper is to provide a critical evaluation of empirical studies on cashless payments and the cashless economy from the perspective of small and medium-sized private enterprises and to identify research gaps in this area.

Research Design & Methods: The article is a review of empirical research on the cashless economy from the perspective of enterprises. The review relates to theory, methodology and contexts applied in studies published over a period of the last 15 years. It also includes the analysis and synthesis of findings from the studies relating to individual countries.

Findings: Future research should concentrate on several areas, including: identification of the opportunities and threats related to the perspective of an entirely cashless economy for enterprises of different scales of activity and representing different sectors, identification of the barriers and drivers related to the cashless economy from a businesses' perspective and defining the potential strengths and weaknesses of fully cashless enterprises in the contemporary economy.

Implications/Recommendations: Filling the identified research gaps requires a holistic approach to payments in enterprises. It requires collection and analysis of data covering businesses representing different scales and industries, and using both quantitative and qualitative methods.

Contribution: The article provides a synthesis of current knowledge, identifies research gaps, and suggests directions for future research in the field of cashless economy.

Article type: review article.

Keywords: cashless economy, payments, enterprises, SMEs.

JEL Classification: D22, E42, G20, O33.

1. Introduction

The cashless economy refers to a situation in an economy where all, or almost all, payments are made without physical cash but by transfer of deposited money between payment accounts, or with e-money. The transition towards the cashless economy can be observed worldwide and is driven by digitalisation, financial inclusion, and changes in payment habits. The concept of the cashless economy has become a topic of special concern due to a noticeable decrease in cash usage for payments in many countries around the world.

The factors accelerating or constraining transformation to the cashless economy may be divided into several groups: institutional, market, technological and social. They concern different economic agents, including consumers and their households, enterprises, financial institutions, public institutions and the state.

The cashless economy is an idea which has not yet been fully implemented in any country, but the contemporary conditions and available payment systems enable enterprises in most advanced and many emerging economies to be fully cashless. Moreover, the relationships of enterprises with counterparts and employees affect the latter in the area of payments. These issues have not been sufficiently explored in the literature and in empirical studies.

The aim of this paper is to provide a critical evaluation of empirical studies on cashless payments and the cashless economy from the perspective of small and medium-sized enterprises (SMEs) and to identify research gaps in this area. The article is designed to provide a synthesis of current knowledge, identify research gaps, and suggest directions for future research in the field of cashless economy. It uses empirical articles searched for by the keywords “cashless economy” and “payments in SMEs” in databases such as: Scopus, Web of Science, Science Direct, Springer Link and Google Scholar. The review refers to theory, methodology and contexts applied in studies published over a period spanning the last 15 years.

The second part presents the concept of the cashless economy and sheds some light on the process of achieving it. The third section examines empirical studies on

payments from the perspective of enterprises with a focus on the cashless economy. It considers the scope of the research, as well as the industrial and geographical dimensions. It also identifies the analytical areas of the research and pinpoints the key theories and methodologies that have been examined. Additionally, it includes an analysis of the findings with regard to the adoption of cashless payments by enterprises, the interactions between merchants and consumers, the costs and benefits of cashless activity, and public policy in this area. The fourth part of the paper identifies the gaps in knowledge about the cashless economy from the perspective of enterprises, especially small and medium-sized ones. It also provides suggestions as to where future research may be usefully directed in order to acquire knowledge about the cashless economy from the perspective of businesses. These suggestions are focused on two levels: microeconomic (payments in a given enterprise) and macroeconomic (payments throughout the whole economy).

2. The Idea of the Cashless Economy and the Transition towards It

The term “cashless economy” is not clearly defined. Its meaning depends on the perspective from which it is analysed. From a macroeconomic perspective, it characterises a situation in which there is no physical means of payment or government-issued money in the form of coins or banknotes (Marszałek & Szarzec, 2022).

At the level of individual entities, achieving the level of complete cashlessness is possible in a situation where an economy combines the use of cash and non-cash payments. Due to the microeconomic perspective adopted in this study, i.e., from the point of view of enterprises, the cashless economy is identified with the situation in an economy where all, or almost all, payments are made without physical cash but by transfer of deposit money between payment accounts or by e-money. This is consistent with Maurya’s (2019) definition, who argued that the cashless economy is characterised by an exchange of funds by cheque, debit or credit cards, or by electronic methods, rather than through the use of cash. The same is true for Ejiofor and Rasaki (2012), Achor and Robert (2012), and Yaqub *et al.* (2013), who claimed that it means an economy where cash-based purchases and transactions are fewer in number than operations carried out using electronic means of payment. Such an approach is also justified by the fact that the transition to an economy without physical currency is a process that is difficult to grasp, as there is no precise threshold at which cash is so insignificant that the economy can be considered cashless.

In the context of the cashless economy as a process, the term “de-cashing” is used. It is defined as the gradual phasing out of physical currency from circulation and its replacement with convertible deposits (Kireyev, 2017). De-cashing is driven by payment innovations but, as coins and banknotes are a payment means used in the shadow economy and also a store of value, monetary authorities in many countries use administrative instruments to achieve such an aim, including: abolishing

large denomination banknotes, imposing ceilings or charges on cash transactions, or introducing declaration requirements on the transport of cash.

The transition to a cashless economy can be achieved by decentralised market-driven forces or centralised state-driven actions. In fact, many countries use a combination of both. In addition, government initiatives can restrict the circulation of banknotes and thus indirectly affect the volume of cashless transactions or, in contrast, prohibit the non-acceptance of cash in transactions.

The cashless economy has important positive implications for society and the economy. They include the reduction in the shadow economy due to greater transparency of payment operations or a reduction in transaction costs (Raya & Vargas, 2022). There are benefits from less use of cash since it discourages tax evasion, illegal immigration and crime, and it enables governments and central banks to handle economic crises more effectively. On the other hand, there is a risk of financial exclusion of some groups (Rogoff, 2017). From the perspective of a single company, a cashless economy may have different advantages and disadvantages depending on its size, sector, and business model. The positive and negative aspects of cashless payments in various areas of activity are also determined by the environment in which the enterprise operates (e.g. the level of development of the economy and its openness, or customers' payment choices). From the perspective of small and medium-sized enterprises, the ability to make cash payments allows for greater flexibility in servicing customers and contractors in one-off transactions. In addition, for small entities operating in the food and catering industry in particular, the inability to pay in cash can be a significant obstacle to trading on agricultural and commodity exchanges, bazaars and markets.

3. Review of Empirical Studies on Payments in Enterprises

3.1. General Remarks

Most studies examining methods of payment are customer-centric. Papers that concentrate on consumer payment habits and the determinants of their choice include, for example: (Jonker, 2007; Borzekowski, Kiser & Ahmed, 2008; Chen, 2008; Klee, 2008; Ching & Hayashi, 2010; Simon, Smith & West, 2010; Kosse, 2013; Harasim, 2015; Schuh & Stavins, 2016; van der Crujssen & van der Horst, 2016; Liu, Ben & Zhang, 2019; Karjaluoto *et al.*, 2020; Klimontowicz & Harasim, 2022). Studies exploring the impact of the COVID-19 pandemic on consumer payment behaviour include: (Ardizzi, Nobili & Rocco, 2020; Auer, Cornelli & Frost, 2020; Jonker *et al.*, 2020; Kim, Kumar & O'Brien, 2020; Akana, 2021; Kotkowski & Polasik, 2021; Kulisz, Bojanowska & Toborek, 2021; Rafdinal & Senalasar, 2021; Wiśniewski *et al.*, 2021).

The perspective of business is also evident in the research. Empirical studies on payments in small and medium-sized enterprises concentrate on the following areas:

- the adoption of cashless payments by micro, small, and medium-sized enterprises (MSMEs),
- the interactions between retailers and consumers,
- the costs and benefits of different payment methods,
- cash and cashless policy implications.

The review of research papers will take into consideration the division into the areas listed above.

3.2. Adoption of Cashless Payments by Enterprises

Most articles considering the perspective of businesses emphasise retailers' adoption of cashless payments. Generally, all of them involve C2B (consumer-to-business) payments, and few of them include B2B (business-to-business) payments. Table A.1 in the Appendix presents selected empirical papers based on various data, methods, approaches and theories. They have been grouped into papers referring to either developed or emerging economies.

Mallat and Tuunainen (2008) examined the adoption of m-payments by Finnish retailers and found that the main drivers of their adoption are related to ways of increasing sales or reducing the costs of payment processing. The complexity of the systems, unfavourable revenue sharing models, lack of critical mass, and lack of standardisation are barriers to their adoption.

The findings of Petrova and Wang (2013) indicate that retailer demand for m-payment in New Zealand (Auckland) is motivated mainly by two factors. The first comes from the customer and refers to the desire for a convenient way to pay using mobile technology. The second comes from the retailer and emphasises the perceived efficiency of m-payment, leading to an increase in revenue. The identified challenges to m-payment adoption include: competition with already established payment technologies and uncertainty about comparative advantages arising from adoption of mobile payments.

Research conducted among businesses representing different sectors in Spain by Cabanillas, Slade and Dwivedi (2016) shows that their poor knowledge about m-payments and the lack of critical mass are the dominant barriers to retailers' adoption of mobile payment systems.

Fung *et al.* (2018) used data for SMEs in Canada and provided estimates for the level of the merchant service charges that would leave retailers indifferent to accepting cash or credit card payment at the point of sale. They found that cash is almost universally accepted by small and medium-sized enterprises, while credit cards are not.

Research conducted by Górka (2012) among enterprises operating in Poland discovered barriers to the development of non-cash transactions in the form of a high level of costs associated with the acceptance of payment cards. It also revealed other factors that affect the attachment of Polish entrepreneurs, especially small ones, to cash, such as: the preferences of contractors and employees, delays in the settlement of card transactions, the lack of conviction of most business owners about the impact of their acceptance on an increase in sales volume, and the related lack of tangible benefits of accepting card transactions.

The results of research conducted by Polasik and Marzec (2018) among trading and service entities in Poland indicated that a larger scale of a company's operations, measured by the number of employees and branches, as well as the organisation within the trading network, have a very strong positive correlation with the likelihood of accepting payment cards. The study showed that potential consumer demand was an important factor increasing the likelihood of card acceptance by the entity. This confirmed the impact of an indirect network effect on the participants in the payment card market.

Szalacha-Jarmużek, Polasik and Jakubowska (2022) explored the attitudes and perceptions towards cashless payments among retailers in Poland as an expression of greater social change. They found that the decisions of SME owners are not based solely on an economic cost-benefit calculation. Social factors such as norms, values and grand narratives (e.g., modernity, innovation, entrepreneurship) play a significant role in a subjective understanding of the possibilities and limitations of the cashless economy. They also influence the individual choices of companies in terms of accepting card payments.

The above studies referred to developed countries. Adoption of cashless payments by enterprises has also been the subject of research in emerging economies. Quantitative research by Loke (2007) on traders in Malaysia enabled factors to be defined that determine a retailer's decision to participate in card schemes. According to the study, the probability of accepting card payments is positively correlated with: the number of cards held by the merchant, the total value of transactions, retailers' perceptions of customers' use of cards, and competitors' acceptance of card payments, while it is negatively correlated with the age of the merchant. The study concluded that customer demand was the most important factor determining a retailer's decision to participate in card schemes, while the traders' desire to increase sales associated with accepting card payments was the second most important factor.

13 years later, Moghavvemi *et al.* (2020) examined motivational drivers, barriers and challenges in the context of the adoption and implementation of m-payment systems by retailers in Malaysia. The results of their study confirmed that the factors motivating retailers to adopt m-payment include: the relative advantage of

decreasing payment processing time and fees, convenience and payment security features. The factors discouraging retailers relate to technological incompatibility, complexity, the cost of investment and the lack of critical mass.

A study by Citradika, Atahau and Satrio (2019), based on a quantitative research method, revealed that the adoption of non-cash payments by traders (batik sector) in Indonesia depended on their financial literacy. In their opinion, financial literacy has a positive influence on attitudes to non-cash transaction, which, in turn, have a positive influence on the intention to accept non-cash transactions. They also found that repetitive behaviour, which is driven by the motive to maintain satisfactory business relations when counterparties require cashless payments, has a positive impact on non-cash transaction habits.

In-depth observations carried out by Chairunnisa, Alfina and Yasmin (2020) in another region of Indonesia and in another sector, concentrated on the readiness of MSMEs to adopt digital payment technology to support the trend towards a cashless society. The results showed that adopting digital payment technology is affected by culture, social influence and acceptance of technology.

A study by Yeboah *et al.* (2020), based on a qualitative approach, concentrated on the role of trust in m-payment technology adoption in Ghana. The authors found that trust in both the technology and service provider are more important for retailers than the perceived usefulness or ease of use.

Kwabena *et al.* (2021) distinguished three groups of determinants that have a statistically significant effect on the adoption of mobile payment systems by small and medium-sized enterprises in Ghana. These include technological factors (relative advantage and compatibility), organisational factors (top management support and employee readiness), and environmental factors (social influence and competitive pressure).

Abebe and Lessa (2020) explored the factors that positively and significantly affect retailers' adoption of mobile payments in Ethiopia, and found that these mainly include: relative advantage, ease of use, usefulness, attitude, trust, risk/security and cost. Compatibility was found not to be significant for traders' adoption of mobile payment systems in the Ethiopian context.

In the study on merchant's perceptions Sinha and Singh (2022) included TAM-based psychological factors, and integrated them with variables concerning perceived experience, perceived cost, perceived trust and word of mouth learning. They found that Indian merchants' intentions to use mobile payment services are mostly influenced by perceived experience, followed by word-of-mouth learning.

The findings arising from the above studies vary due to the different locations, scope and time period of the research. However, they make it possible to define the factors which induce or discourage the adoption by retailers of particular methods of receiving payments in certain conditions. The main drivers for adoption of non-cash

payment relate to expectations of sales and revenue growth, as well as a predicted reduction in the time and costs of payment processing, and payment security issues. The perception of the efficiency of non-cash payments depends on the scale of the company's operations. In developing economies, acceptance of non-cash payments may depend on trust in both technology and service providers.

Potential barriers to the adoption of non-cash payments by retailers (including mobile payments) may relate to technological, economic and social factors. The first group includes the complexity of systems, technological incompatibility and a lack of standardisation. The cashless economy may not be beneficial for an entity due to a lack of critical mass, an unfavourable revenue sharing model and the high costs associated with the acceptance of payment cards (fixed and variable) in relation to turnover. Social factors on the retailers' side may include a lack of knowledge about particular payment mechanisms, or resistance to innovation (observed especially in the case of older merchants).

3.3. Interactions between Retailers and Consumers with Regard to Payments

Many studies have explored the interplay between consumers and merchants on the basis of the concept of two-sided markets, described among others by: Rochet and Tirole (2003), Eisenman, Parker and Van Alstyne (2006), Rysman (2009), McAndrews and Wang (2012), and Rysman and Wright (2014). The concept of two-sided markets focuses on network externalities and the role of intermediaries in matching and pricing for two interrelated markets. Table A.2 in the Appendix presents selected empirical papers that concentrate on the interactions between merchants and consumers based on the above-mentioned theoretical background. It contains the main findings of analysis of these interactions.

The findings of the empirical studies are different because they relate to markets of different maturity. Different conclusions were also drawn in studies on one market (the case of Canada is analysed in five of the studies) due to the different time range of the research and the different forms of payments examined. However, all empirical studies show strong interaction based mainly on customer preferences and merchants' costs. This relationship was also identified in empirical studies on the adoption of cashless payments by enterprises (section 3.2) where it was concluded that customer demand was the most important factor determining a trader's decision to accept non-cash payments.

It is worth noting that the preferences and costs vary mainly between cash and non-cash payment methods, but also within non-cash payments, including different types of payment cards (debit, credit). In addition, the prices of particular payment instruments used by a specific party to the payment transaction (payer, payee) may be based on the assumption of a two-sided market (with the use of interchange fees),

which affects the ability to set the direction and pace of development of a payment market characterised by the low level of development of the cashless economy.

3.4. Costs and Benefits of Different Payment Methods

The costs incurred by enterprises are examined as part of so-called “private costs”¹. A synthesised review of research in this area including the main findings is provided in Table A.3 in the Appendix. The vast majority of the research focuses on the costs incurred by retailers, and conducts a comparison between the costs of cash and card payments. The results of estimating the costs of debit and credit card payments depend on the model of the payment card market in terms of the distribution of fees for card operations. It should be noted that payment pricing is a complex matter (due to the above-mentioned network externalities), being the subject of antitrust investigations carried out by the European Commission (2015).

Some research papers concentrate on broader aspects related to the advantages and disadvantages of certain forms of payment. Greenham and Travers-Smith (2019) claim that firms’ ability to accept digital payments in the UK varies widely across the country and is different in urban and rural areas. They also find that smaller businesses in many sectors require cash handling facilities. Payment in cash is convenient for businesses which operate on tight margins and cash flow, as it can be immediately used to pay for expenses, whereas receipts from card or other electronic payment can take days to clear through the banking system. They also note that merchants incur costs for the processing of card and contactless payment methods.

Statham, Rankin and Sloan (2020) also draw attention to the disadvantages of cashless payments. They report the inconvenience for some small businesses caused by the UK’s shrinking cash infrastructure and increasing bank charges for processing cash takings. In their opinion, rising fees associated with card transactions present a barrier to small businesses.

Bhatt (2021) indicates the benefits arising from the access to cashless transaction systems for MSMEs operating in emerging markets. These include reduced friction and increased efficiency by allowing firms to buy stock and materials, and get paid more easily and quickly, as well as the ability to expand their customer bases (both offline and online), and access working capital in the form of advances backed by future customer receipts. He also draws attention to the cost of cash management.

In conclusion, ignoring the fact that the reviewed studies have a limited territorial scope and in some cases are based on old data, they almost exclusively consider

¹ The concepts of private, social and other cost categories, as well as a synthetic comparison of the results of global surveys of the costs of payment instruments from the perspective of various entities (including consumers, financial institutions, the state), are presented in (Górka, 2013).

the cost of receiving payments. Therefore, there is no holistic approach to the area of payments in enterprises of a different scale and form of activity. There is also no discussion of the advantages and disadvantages of being cashless in conditions of an incomplete cashless economy.

3.5. Cash and Cashless Policy Implications

Studies that concentrate on cash and cashless policy implications consider specific cases of state intervention in the payments market. Ibrahim and Zameer (2018) examined the impact of cashless monetary policies (demonetisation) on micro, small and medium-sized enterprises in India. Demonetisation in this case meant the withdrawal from circulation of large denomination banknotes, and was aimed at reducing the shadow economy. The results of the research showed that its impact on different sectors varied, and concerned overall performance. The sudden shift to a cashless economy severely affected the operation of small enterprises in rural areas due to their reduced ability to operate without cash.

Phinaonyekwelu and Chinwe (2020) explored the effect of central bank policy on the performance of micro, small and medium scale enterprises in Anambra State in Nigeria. A policy of the Central Bank of Nigeria (CBN) introduced a cash handling charge on daily cash withdrawals exceeding N500,000 for individuals and N3,000,000 for corporate entities. The principal findings of the study are that Internet/online banking services, automated teller machine services and mobile banking services, disseminated as a result of this policy, had a positive and significant effect on the performance of MSMEs, however, only those with the capacity to access these services.

Gorshkov (2022) explored cashless payments in Russia and claimed that the transition toward a cashless economy in Russia is overly centralised and administered by the Bank of Russia. In his opinion, the state-driven approach to digitalisation raises concerns about the privacy and security of market participants, and excessive penetration of this sector by the government creates uncertainty for market participants, as well as generates fear about the level of authoritarian control of the economy.

Unlike policies in emerging countries, developed countries are considering or introducing bans on non-cash enterprises in response to limited access to basic products and services for cash-only users (the problem of financial exclusion). For example, this is the case in several cities and states in the US. Meng (2020) examined the different rationales that can be applied to cashless business bans and distinguished three reasons businesses state for shifting to cashless payment systems: improvements in business operations, employee and consumer considerations, and social issues.

A study that should be included in the field of policy issues related to consumer protection on the payment market, is that carried out by Arvidsson, Hedman and Segendorf (2017). They present a research model that explores when traders will stop accepting cash in Sweden, a country where the idea of a cashless society is very advanced. They draw attention to the fact that retailers in Sweden may refuse to accept cash, but at the same time are not allowed to impose a surcharge on consumers paying with any accepted form.

To sum up, there are differing premises and forms of interference in the functioning of the payments market which influence the strategies of enterprises in the area of payments. Due to the dynamically changing landscape of payments on a national and global scale, as well as economy-wide factors, this area requires further research.

4. Recommended Directions and Scope of Future Research

The motivation to adopt specific forms of payment is relatively well recognised in the literature, but only in relation to a specific group of entities distinguished in terms of scale of activity, industry and geographical area. Moreover, previous empirical studies pay insufficient attention to the fact that enterprises are not only recipients that influence the form of payments, but also payers in relation to other enterprises, employees and public institutions.

The relationship between entities in the area of payments, and the benefits and disadvantages associated with non-cash payments, have been examined in the context of specific market and institutional conditions. Studies distinguish areas of impact of the cashless economy at the macro- and microeconomic levels. The macroeconomic perspective considers the economy as a whole, with the focus on the relations between payments and GDP, the shadow economy, budget receipts and the operation of the payments system itself. This also includes the role of the financial sector in payments. At the microeconomic level, research covers the perspectives of consumers and enterprises. Among the research into enterprises, that on retailers dominates.

The transition towards the cashless economy takes place as a result of decisions taken at the level of the state and by individual entities, although at the latter level it is often enforced by regulations. Other motivations for companies to switch to a “cashless mode” include expansion of the customer base and enhanced security, as well as many others not yet identified for individual economies. Equally important are the barriers that stand in the way of transforming entities towards cashless operation. While cash and non-cash management can be a source of costs and risks, it can also bring effectiveness and a broadly accepted competitive advantage.

Considering the research carried out so far, future studies should concentrate on identifying the opportunities and threats (especially costs) related to a fully cashless economy for enterprises of different scales of activity and representing different sectors. This should be supplemented by defining the potential strengths and weaknesses of fully cashless enterprises in contemporary economies, considering the national and international dimensions of their activity.

At the same time, it is necessary to identify the barriers and drivers related to the cashless economy from the perspective of the individual characteristics of businesses and their relationships with their environment (contractors, employees, offices). More research is also needed to explore the expectations of enterprises in terms of support in the transition towards the cashless economy.

In the academic literature, it is hard to find papers that investigate B2B payments. In this area, the specificity of various industries and solutions used in payments between entities of similar and different scales of activity should be taken into account.

Further research would be useful for understanding business payment behaviour, especially based on the perception of the market, technological, social, and institutional conditions of the cashless economy. These conditions include the offers and policies of payment service providers, market infrastructure and regulations, as well as behaviour, and the complex interactions with other groups of payers and payees.

Finally, it is worth mentioning that official data on payments in enterprises do not show the real importance of the cash economy, which occurs mainly in the shadow economy. In this area, it is therefore necessary to fill knowledge gaps on the basis of estimates of the shadow economy, as well as observations of payment behaviour and the attitudes towards cash declared by respondents.

Filling the research gaps identified above requires a holistic approach to payments in enterprises. It requires data collection from businesses representing different scales and industries, and using both quantitative and qualitative methods or even triangulation of research methods. Quantitative research should be national in scope. This is justified by the national nature of the regulations on cash and non-cash transactions and the differences in payment habits between countries. The method of collecting survey data should provide access to entities using modern technologies and those that are more conservative. Therefore, PAPI and CATI methods seem to be a better solution than, for example, CAWI. The selection of the sample should consider the company location criteria, i.e. the macroregion in which the company is based and the size of the company (measured by staff size and turnover value), as well as the industry. In qualitative research based on e.g. individual in-depth interviews (IDI), it is necessary to ensure the participation of enterprises with diverse profiles and scales of activity.

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Conflict of Interest

The author declares no conflict of interest.

Appendix

Table A.1. Selected Empirical Papers on Adoption of Cashless Payments by Enterprises

Authors (Year)	Object	Subject	Location	Method/Approach/Theory
Developed economies				
Mallat & Tuunainen (2008)	merchants	mobile payment systems	Finland	qualitative (based on in-depth interviews) and quantitative approach (analysis of the questionnaires)
Petrova & Wang (2013)	small business retailers	mobile payments	New Zealand (Auckland)	qualitative approach (based on semi-structured personal interviews)
Cabanillas, Slade & Dwivedi (2016)	businesses (different sectors and scale)	mobile payments	Spain	quantitative approach (semi-structured survey methodology)
Fung <i>et al.</i> (2018)	SMEs	cash and credit cards	Canada	merchant indifference test proposed by Rochet and Tirole (2011)
Górka (2012)	merchants	cash and payment cards	Poland	surveys based on CAPI method
Polasik & Marzec (2018)	merchants	payment cards	Poland	surveys based on CATI and the logit model
Szalacha-Jarmużek, Polasik & Jakubowska (2022)	merchants	payment cards	Poland	qualitative (based on in-depth interviews); the concept of institutional isomorphism by DiMaggio and Powell (1983)
Emerging economies				
Loke (2007)	merchants	credit cards	Malaysia	quantitative approach based on data obtained by questionnaire and a binary choice logistic regression model

Table A.1 cont'd

Authors (Year)	Object	Subject	Location	Method/Approach/Theory
Moghavvemi <i>et al.</i> (2020)	merchants	mobile payments	Malaysia	qualitative approach (based on in-depth interviews from multiple retail categories)
Citradika, Atahau & Satrio (2019)	batik SMEs	non-cash transactions	Indonesia (Pekalongan)	quantitative approach based on data obtained by direct interviews with respondents and theory of interpersonal behaviour proposed by Triandis (1977)
Chairunnisa, Alfina & Yasmin (2020)	MSMEs (food and beverage sector)	cashless payments	Indonesia (Tuban, East Java)	qualitative approach (in-depth observation based on IDI)
Yeboah <i>et al.</i> (2020)	merchants	mobile payments	Ghana	qualitative approach based on technology acceptance model and the trust-theoretic model
Kwabena <i>et al.</i> (2021)	SMEs	mobile payment system	Ghana	quantitative approach based on closed-ended questionnaire (145 respondents) and a structural equation modelling (SEM)
Abebe & Lessa (2020)	merchants	mobile payments	Ethiopia	quantitative approach based on research model
Sinha & Singh (2022)	merchants	mobile payment services	India	quantitative approach based on online survey of 215 Indian merchants and modified TAM model

Source: the author.

Table A.2. Selected Empirical Papers on Interactions between Merchants and Consumers with Regard to Payments

Authors (Year)	Subject	Location	Main Findings
Rysman (2007)	payment cards	USA	There is a correlation between consumer usage and retailers' acceptance which suggests a positive feedback loop between consumer usage and retailers' acceptance of payment cards
Briglevics & Shy (2014)	credit cards, debit cards and cash	USA	A discount would steer some customers to a cheaper payment method – debit card and cash
Bounie, François & Van Hove (2016)	payment cards	France	Consumer preferences drive retailers' card acceptance

Table A.2 cont'd

Authors (Year)	Subject	Location	Main Findings
Carbo-Valverde, Chakravorti & Fernandez (2016)	payment cards (interchange fees)	Spain	Reducing interchange fees may have a positive effect on adoption by consumers and retailers adoption and usage when retailers' adoption is far from complete
Arango <i>et al.</i> (2012)	payment innovations	Canada	Diffusion of payment innovations is an inherently complex problem as traders will accept these innovations only if they believe that consumers demand them. Consumers will demand them only if they are accepted by traders
Arango, Huynh & Sabetti (2015)	payment cards	Canada	In mature card payment markets card users are quite unresponsive to variations in incentives and the reductions in merchant fees may broaden retailers' acceptance of electronic payments while having minimal impact on market outcomes
Fung, Huynh & Kosse (2017)	different payment methods	Canada	Retailers' perceptions and the costs they incur from accepting payment methods are not the only factors that determine which methods they accept. Retailers also consider which payment methods consumers are likely to carry and prefer
Wakamori & Welte (2017)	cash and payment cards	Canada	Based on a policy simulation imposing universal card acceptance among traders the authors find that overall cash usage would decrease by only 8.0 percentage points, implying that cash usage in small-value transactions is driven mainly by consumer preferences
Huynh, Nicholls & Shcherbakov (2019)	payment instruments	Canada	The network effects originating on the consumer side of the market are stronger than those coming from the retailer side. Under full adoption and acceptance of all payment instruments by both sides of the market, consumers and retailers would continue using cash

Source: the author.

Table A.3. Selected Surveys on Costs of Payments Incurred by Enterprises

Authors (Year)	Subject	Location	Main Findings
Bergman, Guibourg & Segendorf (2007)	cash, debit and credit card payments	Sweden	For low-value payments, cash is more cost efficient, both from a social and from a private perspective. Retailers pay too much for credit-card payments

Table A.3 cont'd

Authors (Year)	Subject	Location	Main Findings
Schmiedel, Kostova & Ruttenberg (2012)	cash, credit and debit cards, and, in some countries, cheques	13 European countries	Half of the social costs are incurred by retailers. Retailers incur higher private costs than do banks or infrastructures, as they face higher external costs to be paid to other participants in the payment chain
Jonker (2013)	cash and debit card payments	The Netherlands	The efficiency gains in the payment chain arising from innovations and economies of scale were for the most part achieved on the retailers' side. The lowering of debit card acquiring fees made debit card payments more attractive for retailers. Increased fees for cash withdrawals and cash deposits have made cash more expensive for retailers
Stewart <i>et al.</i> (2014)	debit and credit cards, eftpos, cheques, direct debit, cash	Australia	Payment cards are the most expensive instrument and cash is the lowest-cost instrument for SMEs. Large businesses reported that debit transactions cost less than cash
European Commission (2015)	cash and card payments	10 European Union countries	The current costs of cards for traders exceed the cost of cash per transaction. Due to the current price policy of payment organisations the retailers suffer a negative externality
Carlos & Taylor (2009)	cash, debit cards, and credit cards	Canada	Debit cards are the least costly payment method for a broad cross-section of traders because of the relatively low debit card fees per transaction. Small traders still perceive cash as the least costly payment method at the point of sale
Kosse <i>et al.</i> (2017)	cash, debit card and credit card payments	Canada	Debit cards carry the lowest private costs for retailers for transactions over \$20
Cabinkova, Knümann & Horst (2019)	cash, giro-card, direct debit, credit card	Germany	It is not possible to determine which means of payment is currently the most cost effective for a given enterprise, so having a mixture of payment options seems to be the most attractive arrangement at present. Cash is not necessarily more expensive than electronic payment procedures, and in some cases it can even be the least expensive choice

Table A.3 cont'd

Authors (Year)	Subject	Location	Main Findings
Danmarks Nationalbank (2019)	cash payments, card payments at point of sale, online card payments and other remote payments	Denmark	More than half of the amount of costs related to payments at point of sale can be attributed to cash payments as they are more resource-consuming for retailers than card payments. A significant cost in connection with card payments at point of sale is the fee payable by retailers for receiving such payments, i.e. the acquiring fee
Przenajkowska & Polasik (2019)	cash, prepaid cards, debit cards, credit/charge cards, mobile payments, credit transfers and direct debits	Poland	The highest costs were generated by cash regardless of the analysed group of enterprises. The second most important payment instrument in this respect was the debit card. In physical points of sale, the lowest share of private costs was observed for credit transfers. In e-commerce, the highest share in private costs was recorded for cash on delivery followed by pay-by-link and then payment cards. In payments of bills, the highest private costs were reported for cash, direct debit and credit transfers

Source: the author.

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