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Obstacles to investments in mobile payments:

The perspective of merchants

(“Work in progress”)

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Abstract

The main objective of the ongoing research is to investigate obstacles and driving forces affecting merchants' decision to invest in mobile payment solutions. The core aim of this paper is to present initial results of a desktop analysis revealing the current market situation, identifying main players, and estimating the structure of investment costs. In order to do that available secondary information was analyzed.

The conducted analysis served to identify market fragmentation existing in the Swedish market due to existence of a number of competing mobile payment solutions. Another finding allows making conclusion, that retailers select to adopt already existing solutions, rather than developing own. Finally, the size of an organization and financial resources are important when making a decision to invest in a new payment solution.

Keywords: Mobile Payment Services, Organizational Acceptance of Technology, Diffusion of Innovations, Service Adoption, Mobile commerce, M-commerce

1 Introduction and Background

With constantly increasing level of penetration of mobile smartphones, mobile payments are expected to become a next logical step on the way to a cashless society. Mobile payment can be defined as *“a type of payment transaction processing in which the payer uses mobile communication techniques in conjunction with mobile devices for initiation, authorization, or completion of payment”* (Goeke and Pousttchi, 2010).

At the same time, mobile payment is an important part of mobile commerce (m-commerce) applications (Mallat et al., 2004; Goeke and Pousttchi, 2010). M-commerce can be defined as *“the integration of mobile computing device into business processes”* (Snowden et al., 2006) resulting in *“content delivery (notification and reporting) and transactions (purchasing and data entry) on mobile device”* (Leung and Antypas, 2001).

Currently, this area is a popular area of investments for different market actors, such as banks, mobile network operators, mobile payment service providers, merchants, and so on. Indeed, implemented on a mobile phone, mobile payments can be combined with additional services (for example, public transport and event ticketing, loyalty programs, and so on). This leads to a development of m-wallets, applications that include all items that people usually hold in their physical wallets.

Mobile payments can be referred as two side market (Eisenman et al., 2006), where retailers accepting mobile payments represent one side, and customers using the service another. Both sides express certain expectations about benefits of the mobile payments. So, consumers expect easy-to-use solution, better quality and personalization of the service, guaranteed security, low service costs, and ubiquitous infrastructure (Karnouskos and Fokus, 2004).

In turn, when adopting mobile payments, retailers (or merchants) expect: to make payment process quicker and easier; low investment and service costs; compatibility and integration of all payment solutions with existing infrastructure (like point of sale terminals (PoS)); reliable, secure and trusted service; and customization of service (like adding loyalty schemes) (Karnouskos and Fokus, 2004). In addition, mobile payment services provide retailers a direct channel for communication with consumers, which can be used for personalized offers, further improvement of services and assortment, better understanding of consumer needs and preferences, dynamic consumer base management, and so on.

The overall theme of the ongoing research is mobile payment acceptance by merchants and, hence, their willingness to invest in this type of services. And the main questions that will be addressed by the research are following:

What kind of barriers and obstacles affect merchants' decision to invest in mobile payments?
What are the driving forces that affect merchants' decision to invest in mobile payments?

Currently, the research is in its initial stage. The main aims of the first stage are (1) *to investigate the current situation in the market*, (2) *to identify main market players*, and (3) *to estimate the structure of costs of investment in mobile payment services*. The first initial findings are presented in this work-in-progress paper.

The paper is organized as follows: the next section presents the overview of related literature and discussion of the analysis framework. Section 3 is dedicated to methodology and research approach. An overview of mobile cases is presented in section 4, and their analysis is presented in section 5. Finally, conclusions and suggestions for further research are proposed in section 6.

2 Literature Review and Contribution

An organizational decision to invest in mobile payment solutions and development of needed infrastructure mainly depends on the levels of the service adoption and diffusion of the technology in the market. The overview of related studies and theoretical background is presented in this part.

2.1 Review of Empirical Studies

Mobile payments, performing as a platform providing different mobile services, serves and brings together two groups of users: retailers or merchants from one side and customers from another side. These two different groups are linked to each other by the network effect phenomenon and represent a two-sided market (Eisennman et al., 2006).

A vast majority of implemented studies have been focused on adoption of mobile payment and related mobile services (e.g. m-commerce, mobile ticketing, mobile banking, and so on) by consumers (Dahlberg and Öörni, 2007; Goeke and Pousttchi, 2010; Hayashi, 2012; Kim et al., 2010; Mallat, 2007; Mallat et al., 2008; Ratten, 2009; Shin, 2009; Wu and Wang, 2005). The following most popular streams of research works can be identified:

1. Studies utilizing the technology adoption model (TAM) (Goeke and Pousttchi, 2010; Kim et al., 2010; Wu and Wang, 2005) or the unified theory of acceptance and use of technology (UTAUT) (Shin, 2009);
2. Researches based on a theory of diffusion of innovations (Mallat, 2007);
3. Some researchers tried to overcome the limitations of existing models by combining several models, for example, the theory of planned behavior (TPB) and the diffusion of innovations theory (Dahlberg and Öörni, 2007); or by development of own analysis framework extending existing models, for example, UTAUT model extension (Amoroso and Magnier-Watanabe, 2012);
4. Some of implemented studies use different frameworks for analysis, for example, a social cognitive theoretical framework applied to study of m-commerce acceptance in the banking industry (Ratten, 2009).

A number of studies look into specific problems related to network externalities, switching costs, and behavioural barriers (Van Hove, 1999; Klemperer, 1995; Constantiou et al., 2006). An overview of obstacles preventing consumers from accepting mobile payment solutions that were addressed by different implemented studies is provided in *Table 1*.

It needs to be said, there has been implemented a limited amount of studies addressing problems of organizational technology acceptance in the mobile payment, m-commerce, and related areas. A literature review on potential benefits of mobile marketing for consumers and retailers was performed by Ström (2012).

Other related works address several levels of technology acceptance by organizations: at the organizational level and intra-organizational level, that is the adoption of technology by individual employees. The example of the latter researches is presented in a study carried out by Lapierre and Denier (2005). The researchers investigated ICT adoption by salespersons.

One of the earliest researches on technology acceptance at organizational level and a role of critical mass of in the diffusion of telecommunication services was performed by Mahler and Rogers (1999). The authors investigated the problem using an example of German banks. A study on information technology adoption by both individual customers and organizations has been performed by Chwelos et al. (2001). The researchers tested the adoption of electronic data interchange using three factors: readiness, perceived benefits, and external pleasure.

Table 1. Obstacles preventing consumers from accepting mobile payment solutions addressed by previous studies.

Obstacle	Sources	What is solved	Problem to address (my contribution)
Change of behavior habits	Dahlberg and Öörni, 2007	Identification of habit change in Finland	
Perceived ease of use / Complexity	Goeke and Pousttchi, 2010; Hayashi, 2012; Mallat, 2007; Mallat et al., 2008; Kim et al., 2010; Shin, 2009; Wu and Wang, 2005; Amoroso and Magnier-Watanabe, 2012; Constantiou et al., 2006	Covered from different perspectives	Addressing this factor from retailers' perspective
Perceived usefulness	Goeke and Pousttchi, 2010; Mallat et al., 2008; Kim et al., 2010; Shin, 2009; Wu and Wang, 2005	Different perspectives discussed	
Attitude	Mallat et al., 2008; Shin, 2009; Amoroso and Magnier-Watanabe, 2012	Different perspectives discussed	
Expressiveness	Goeke and Pousttchi, 2010	Identified as an important factor	
Costs	Goeke and Pousttchi, 2010; Hayashi, 2012; Mallat, 2007; Mallat et al., 2008; Wu and Wang, 2005; Van Hove, 1999; Constantiou et al., 2006; Frolick and Chen, 2004	Different perspectives discussed	
Trust in mobile payment service provider	Goeke and Pousttchi, 2010; Mallat, 2007; Mallat et al., 2008; Shin, 2009; Amoroso and Magnier-Watanabe, 2012	Different perspectives discussed	
Perceived security and privacy risks	Goeke and Pousttchi, 2010; Hayashi, 2012; Mallat, 2007; Mallat et al., 2008; Shin, 2009; Wu and Wang, 2005; Amoroso and Magnier-Watanabe, 2012; Constantiou et al., 2006; Benou et al., 2012	Different perspectives discussed	Addressing this factor from retailers' perspective
Relative advantage	Hayashi, 2012; Mallat, 2007; Amoroso and Magnier-Watanabe, 2012	Partly addressed	
Lack of consumer awareness and education	Hayashi, 2012; Kim et al., 2010	Identified a need to educate consumers	Addressing this factor from retailers' perspective
Convenience	Hayashi, 2012; Kim et al., 2010	Partly addressed	
Network externalities	Hayashi, 2012; Mallat, 2007; Van Hove, 1999	Partly addressed	Addressing this factor from retailers' perspective
Compatibility	Mallat, 2007; Mallat et al., 2008; Kim et al., 2010; Wu and Wang, 2005; Van Hove, 1999	Different perspectives discussed	
Situational use context	Mallat, 2007; Mallat et al., 2008; Benou et al., 2012	Identified as an TAM additional factor	
Prior experience	Mallat et al., 2008	Identified as an TAM additional factor	
Social environment, culture	Ratten, 2009; Shin, 2009; Amoroso and Magnier-Watanabe, 2012	Identified as an important factor	
Attractiveness of alternatives	Hayashi, 2012; Amoroso and Magnier-Watanabe, 2012	Partly addressed	
Switching costs	Klemperer, 1995	Identified as an important factor	
Quality of service	Constantiou et al., 2006	Identified as an important factor	Addressing this factor from retailers' perspective

Obstacles to the adoption of business-to-business applications using the example of e-markets are explored in works implemented by Johnson (2009; 2010). Grandón et al. (2011) have performed a comparison of the theory of planned behaviour (TPB) and the theory of reasoned action (TRA) applied in analysis of adoption rate of e-commerce by small and medium sized business in Latin America.

A number of previously implemented studies explore the role of marketing in m-commerce, for example, analysis of the role of marketing in the context management for m-commerce applications (Benou et al., 2012). This study contributes to the understanding of relationship existing between consumer behaviour and context information used in m-commerce applications, and highlights the critical role of this information. The implications of m-commerce for marketing and retail pricing are discussed in another study carried out by Balasubramanian et al. (2002). The major findings are discussion of dynamic mobile price,

opportunity to leverage location and time based consumer targeting, possible implications to retail price competition, and ways to gain competitive advantage.

Advantages and obstacles for m-commerce adoption by both businesses and customers were analyzed in research carried out by Frolick and Chen (2004). Potential barriers and advantages for mobile payment adoption by merchant at the organizational level were addressed in research implemented by Mallat and Tuunainen in 2005, when mobile payment solutions still were in the early development stage. The main identified barriers are perceived incompatibility of m-commerce with existing business model, higher costs, lack of common standards, a confusing big number of available m-commerce solutions, and their perceived complexity.

An overview of obstacles affecting organizational acceptance of mobile payments and services that were addressed by previously implemented studies is provided in *Table 2*. The table also defines the contribution of the current research.

Table 2. Obstacles preventing organizations from accepting mobile payment solutions addressed by previous studies.

Obstacle	Sources	What is solved	Problem to address (my contribution)
Costs	Mallat and Tuunainen, 2005; Johnson, 2009; Frolick and Chen, 2004	Partly addressed	Addressing this factor from retailers' perspective
Network externalities Critical mass	Mallat and Tuunainen, 2005; Mahler and Rogers, 1999	Partly addressed	Addressing this factor from retailers' perspective
Incompatibility of mobile payments with existing business model	Mallat and Tuunainen, 2005	Partly addressed	
Lack of standards	Mallat and Tuunainen, 2005	Partly addressed	Addressing this factor from retailers' perspective
Security issues	Mallat and Tuunainen, 2005; Frolick and Chen, 2004	Partly addressed	Addressing this factor from retailers' perspective
Trust in mobile payment service provider	Mallat and Tuunainen, 2005; Johnson, 2009	Partly addressed	Addressing this factor from retailers' perspective
Firm size	Johnson, 2009	Identified as an important factor	Addressing this factor from retailers' perspective
Risk	Johnson, 2009	Under-researched	Addressing this factor from retailers' perspective
Uncertain profitability/ Return on investment (ROI)	Mallat and Tuunainen, 2005; Frolick and Chen, 2004	Partly addressed	Addressing this factor from retailers' perspective
Several competing mobile payment solutions	Mallat and Tuunainen, 2005	Under-researched	Addressing this factor from retailers' perspective
Environmental obstacles		Unaddressed	Addressing this factor from retailers' perspective
Financial resources	Chwelos et al., 2001	Under-researched	
Complexity (for personnel) / IT sophistication	Mallat and Tuunainen, 2005; Chwelos et al., 2001	Partly addressed	
Learning time	Johnson, 2009	Under-researched	
Resistance to organizational change	Johnson, 2010; Lapierre and Denier, 2005	Partly addressed	

It is possible to conclude that organizational adoption of mobile payment services is mainly undiscovered area. The main contribution of this paper is in a better understanding of the

most significant obstacles and barriers for mobile payment adoption preventing retailers from investment in mobile payment services and their infrastructure. In addition, the research is not only focused on the key obstacles. Its results can serve to define what needs to be done in order to overcome the barriers. Finally, the main driving forces to invest in mobile payment solutions can be determined.

2.2 Theoretical Background

The analysis of technology adoption can be implemented using several different theories. The technology acceptance by both merchants and customers can be addressed applying TAM proposed by Davis (1989). Perceived usefulness, perceived ease of use, and user acceptance are the main model's constructs. TAM is mainly used in order to explain technology acceptance by individual users. Due to the fact that the model does not provide variables and criteria to assess complex organizational business environment, it does not fit the objectives of the current research.

Another alternative is to use the theory of diffusion of innovations (Rogers, 2003). The process of diffusion can be defined as communication of an innovation “through certain channels over time among the members of a social system” (Rogers, 2003:5). In this case, an innovation is “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (Rogers, 2003:12).

A decision to adopt an innovation consists of five stages (Rogers, 2003:169): (1) *knowledge* about the innovation and its functionality; (2) *persuasion* occurs with positive or negative attitudes formed towards the innovation; (3) at the next step a *decision* is made to adopt or reject the innovation; (4) *implementation* is actual use of the innovation; (5) *confirmation* is a decision to continue or to stop using the implemented innovation. Adoption of an innovation in the markets can be measures using a rate of adoption. This is “the relative speed with which an innovation is adopted by the members of a social system” (Rogers, 2003:221).

An integrated model of organizational adoption and diffusion of innovations was developed and proposed by Frambach and Schillewaert (2002). The model addresses both levels of innovation adoption in the organization: organizational and intra-organizational. For the purposes of this research, only organizational level will be addressed (see *Figure 1*).

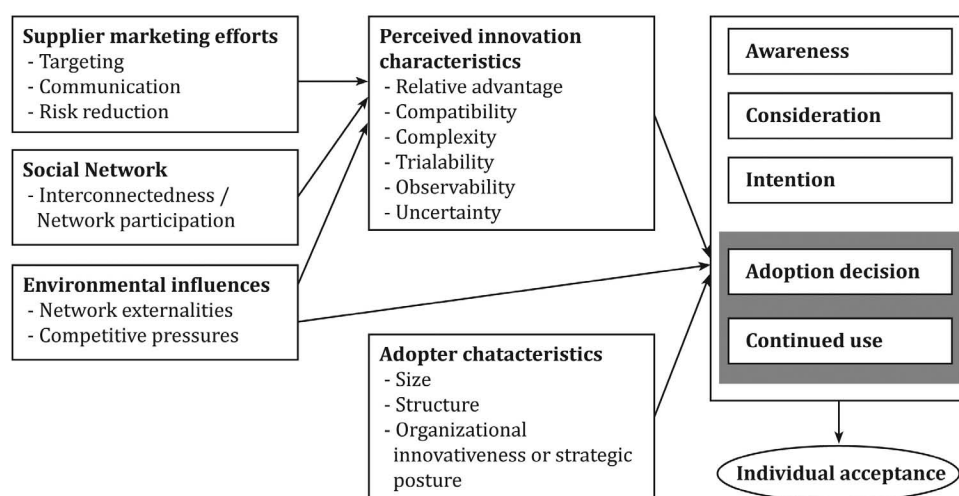


Figure 1. A conceptual framework of organizational level of innovation adoption (Frambach and Schillewaert, 2002).

The main factors affecting innovation adoption at organizational level are: perceived innovation characteristics, adopter characteristics, supplier marketing activity, social network, and environmental influences (Frambach and Schillewaert, 2002).

2.2.1 Perceived Innovation Characteristics

The decision to adopt a new technology depends on its perception by members of organization's department responsible for making such decisions (Frambach and Schillewaert, 2002; Rogers, 2003). When making decision, the following criteria of innovation should be considered (Frambach, 1993):

- *Potential benefits* of innovation;
- *Relative advantage* achieved due to the deployment of the innovation;
- *Compatibility* with existing values and needs of adopters;
- *Complexity* which defines ease of use of the innovation;
- *Trialability* is the opportunity to try or test the product or developed solution;
- *Observability*; and
- *Uncertainty of innovation*, which is related to uncertainty about the promised innovation relative advantage and to uncertainty about implementation of the innovation within the organization and bringing it to the needed level.

2.2.2 Adopter Characteristics

The characteristics of the organization are important for innovation adoption (Frambach and Schillewaert, 2002). A *size* of the organization is one of criteria affecting decision to adopt a new technology. However, there is no single opinion, if that are large organizations that tend to adopt innovation first, or that are small and flexible firms being the first technology adopters in the market (Frambach and Schillewaert, 2002).

An organization *structure* by a big degree influences the process of innovation adoption. So, a decision about the adoption of an innovation is more likely to be skipped in formalized and centralized organizations. Organizations that are complex, or specialized, or where employees have different professional background, are more likely to facilitate the adoption of an innovation (Frambach, 1993; Frambach and Schillewaert, 2002).

Organizations with strategies focused on *innovativeness* are more open to adopt a new products or solutions.

2.2.3 Supplier Marketing Efforts

The innovation supplier's marketing activity can affect the positive organization's decision about the adoption of an innovation. The main factors to consider are (Frambach, 1993; Frambach and Schillewaert, 2002):

- Thoughtful *targeting* of potential innovation adopters;
- *Communication* and creating awareness and positive consumer perception, and this way affecting the adopter decision about the deployment of the innovation;
- *Compatibility* with existing values and needs of adopters;
- Different *risk reduction* measures can be considered, for example, a trial period, a low introduction price, which can result in a quicker acceptance.

2.2.4 Social Network

Social networks, where members of organization participate, is an additional channel for information spread about the innovation that can facilitate its quicker adoption (Frambach, 1993; Frambach and Schillewaert, 2002).

2.2.5 Environmental Influence

Different external factors can play a significant role when making a decision to adopt an innovation (Frambach, 1993; Frambach and Schillewaert, 2002):

- *Network externalities* might become reasons for innovation adoption. In terms of the theory of network externalities, each new user increases a value of “network goods” (Van Hove, 1999). Deployment of mobile payment deals with an infrastructural dilemma also known as the “chicken and egg” problem (Van Hove, 1999). On one hand, merchants are not willing to invest in the development of infrastructure without a critical mass of consumers, however, consumers will not adopt mobile payment substituting currency if it cannot be used everywhere (Mallat, 2007).
- *Competitive pressures*. A situation in highly competitive markets might motivate adoption of innovation in order to keep current market position (Frambach, 1993; Frambach and Schillewaert, 2002).

The described model of organizational adoption of innovation can also be extended by adding the consumer perspective:

- Mobile payment service substitutes;
- Perceived usefulness;
- Ease of use;
- Quality of service;
- Switching costs for consumers;
- Behavioral and psychological consumer barriers;
- Lack of consumer awareness and education;
- Impact of situational context;
- Consumer perceived security risks and privacy issues.

3 Methodology

3.1 Data Collection

The qualitative method and the multiple case study approach seem to be the most appropriate for the current research. Both secondary and primary information is planned to be collected.

First of all, *secondary information* about the current market situation has been collected in the form of press releases, articles, market analysis implemented by third organizations, and other available sources. Then *primary information* will be gathered through in-depth personal interviews with executives and top-level managers representing companies participating in the selected pilots. Companies of interest are Swedish largest retail chains like ICA, Axfood, and Bergendahls; McDonalds, a fast-food restaurant chain; Webhallen, an e-shop; Beijing8, a Chinese food restaurant, and others.

3.2 Research Approach

The research process will be performed in several stages. A *desktop analysis* has been performed during the first stage. The main objective of this stage has been to collect secondary information about the current market situation in order to:

1. Observe the main trends in mobile payment market;
2. Identify the main market players; and
3. Estimate a structure of investment costs in mobile payment services.

Evaluation of initial investment costs and risks, gained benefits and advantages, and possible ROI is one of analysis steps before making a decision to invest in a new payment solution. Due to the fact, that mobile payment is a two-side market, the success of a newly introduced solution belongs on a rate of its adoption among consumers. Hence, costs of consumers should also be considered. Based on previous studies (Constantiou and Knutsen, 2006; Klemperer, 1995; Mallat, 2007; Van Hove, 1999; Rogers, 2003), it is possible to specify a number of sources of costs and risks that merchants should consider before making the decision about investment in a new mobile payment solution. They are listed in *Table 3*.

Table 3. Cost structure of a deployment of a mobile payment solution for retailers and consumers.

Retailers	Consumers
a. Infrastructure development and deployment costs Cost of new readers or modification of existing readers Integration with a cashier system Mobile application development	a. Time costs Application download and registration procedure Learning costs depending on service complexity
b. Service introduction and deployment cost Costs and time of personnel training Marketing campaigns to increase consumers awareness about the mobile payment solution	

During the second stage, the actual research will take place. Information gathered through in-depth interviews with representatives of retail chains will be analyzed using the framework of innovation adoption at organizational level (discussed in part 2.2 *Theoretical background*). As a result, the main obstacles to and drivers of investment in mobile payment will be defined.

4 Overview of Mobile Payment Cases

4.1 Mobile Payments in Sweden

Swedish market of mobile payment is quickly developing. During 2010–2012, new solutions were introduced by different actors, including Swedish banks and new Swedish companies, such as Accumulate, iZettle, Payair, Seamless, and 4T Sweden.

Moreover, there is a high level of penetration of mobile smartphones, accounting for about 68% of all mobile phones in use (Telenor, 2012). This means that a big segment of consumers can access and use mobile payment services.

Another observation is related to a mobile wallet – WyWallet – solution introduced by 4T Sweden, a joint venture established by mobile operators. This solution is a response of mobile operators to a change in regulation. They are not allowed to include payments for non-telecom services in their bills, starting from February, 2013 (Markendahl, 2013). Moreover, the personal details of payer should also be known. Currently, in order to perform SMS payments, users have to register a WyWallet service account and to provide personal data. The consumers are not satisfied with the service and are not willing to provide personal data for micro-payments.

A number of developed mobile payment solutions were and still are being tested in pilot projects implemented by different retail chains, coffee shops, and restaurants during the last couple of years. Currently, a range of retail and restaurant chains selected to deploy mobile payment solutions in their stores. The overview of available mobile payment solutions and their use cases is presented in *Table 4* and discussed in more details in this section.

Table 4. Mobile payment solutions provided by different actors in retail.

Mobile payment solution	Retailer	Mobile payment solution's provider	Payment type	Other parties involved
SEQR	Axfood, Webhallen, McDonalds, Ur&Penn	Seamless	Monthly bill	Collector (billing)
Bart	Axfood	Swedbank, Sparbankerna	Bank account	Shops equipped with PoS terminals
Payair	Best of Brands, Davids	Payair	Bank accounts Credit card	
ME	Beijing8	Accumulate	Bank account Bank card	Point, VeryFone company
Own mobile apps: Bergendahls, MatHem.se	Bergendahls, MatHem.se		Bank card	

4.2 SEQR Mobile Payment Solutions

Since spring 2012, SEQR, a mobile payment solution developed by Seamless, can be used for payments in a number of different shops, e-shops, and restaurants (Seamless, 2012; Sellebråten, 2013). Moreover, the solution can be used free of charge and is not linked to any bank account or card. So, there is no dependence on consumers' affiliated banks. In order to perform the payment, a QR-code should be scanned and payment approved with a personal PIN code. An electronic payment conformation, a receipt, is saved in the application. The SEQR users have to register a credit account at a financial service company Collector (Seamless, 2012; Sellebråten, 2013). The financial company (Collector) handles all questions

related to payment transfers and issues monthly bills to the consumers. The retailers issue bills via the mobile payment app (see *Figure 2*).

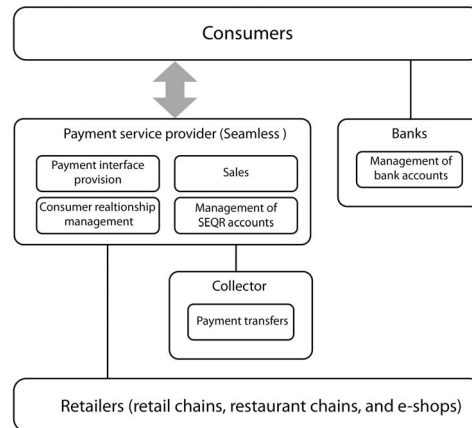


Figure 2. Actors and relations for SEQR mobile payment solutions. The grey arrow indicates “billing relationship”.

A number of retailers, currently, accept SEQR. The overview of several large and small scale projects is presented below.

4.2.1 Case of Axfood Company

AxFood retail chain is the third largest retailer in the Swedish everyday goods market. The size of the market share is about 15%. Axfood was established in 2000 and, currently, owns following retail shop chains: Hemköp, Willys, a grocery chain PrisXtra; convenience store wholesaler Axfood Närlivs; and centre of logistics Dagab¹.

The three Axfood’s grocery chains address different market segments. So, consumers targeted by Hemköp are active people of all ages, “seeking variation, a range of choices and high quality at an attractive price”². Willys is targeting price-sensitive consumers, large households, and families with children³. One of its successful offerings is “Sweden’s cheapest bag of groceries”. The target segment of PrisXtra are food lovers. In the stores they are attracted by a wide product assortment and “an inspiring shopping experience”⁴.

The vision of the company accents innovative thinking and growth. One of growth aspects is development of e-commerce and ready-meal offers. Different chains offer different loyalty programs for consumers. There are online shopping services. A pilot project NetXtra offers online grocery shopping with opportunity of home delivery, online shopping with pick-up in the store, or physical shopping in the store (Axfood, 2011).

Mobile payment trial: SEQR. In October 2012, after a prior trial, Axfood announced about an introduction of SEQR in its retail chains Hemköp, Willys, and PrisXtra (Axfood, 2012a). By December 2012, about 2400 PoS were installed at 380 Axfood’s stores throughout Sweden.

¹ Axfood. History. <http://www.axfood.se/en/About-Axfood/History/>

² Axfood. Hemköp. <http://www.axfood.se/en/About-Axfood/Business/Hemkop/>

³ Axfood. Willys. <http://www.axfood.se/en/About-Axfood/Business/Willys/>

⁴ Axfood. PrisXtra. <http://www.axfood.se/en/About-Axfood/Business/PrisXtra/>

4.2.2 Case of Webhallen Sverige AB

Webhallen Sverige AB is an e-shop, which was founded in 1999. An assortment of the e-shop provides a range of home electronics, home care goods, hardware, software, and other products. There are ten physical shops located between Malmö and Uppsala. Sales are organized via web-shop and mail orders. In 2011, the sales reached 815 million SEK (Webhallen, n.d.a). SEQR is one of e-shop's payment opportunities (see *Figure 3*).

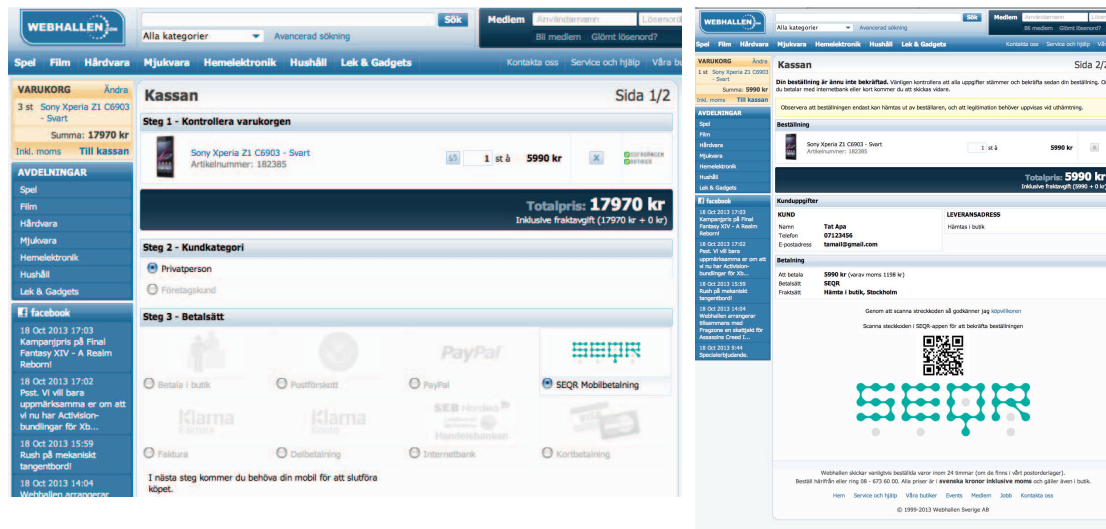


Figure 3. Website of Webhallen.

4.2.3 Case of McDonald's

McDonald's, a chain of fast-food restaurants, tested SEQR mobile payment solution at four of its restaurants in Stockholm during summer 2012 (Seamless, 2013). The pilot project was successful and in March 2013 Seamless and McDonald's reached an agreement about the introduction of SEQR solution in other restaurants in Sweden.

4.2.4 Case of Ur&Penn

SEQR mobile payment solution was integrated with the most popular cashier system, LS Retail. This system is used by Ur&Penn, a leading watch distributor in Nordic countries (Seamless, 2013b). This means that SEQR can be used without installation of additional equipment in shops.

4.3 Bart provided by Swedbank and Sparbankerna

Another mobile payment solution dedicated to retail purchases is Bart. This service was launched by Swedbank and Sparbankerna (Swedbank, n.d.). Bart is directly related to consumer's bank account, acts as a bank card, and performs payment transactions via QR-codes (Swedbank, n.d.; Sellebråten, 2013) (see *Figure 4*). The consumers make payments using the separate payment application directly connected to their bank accounts. Banks act as the mobile payment solution providers. They have a direct relation with the consumers, manage their bank accounts, and perform money transfers. Additionally, bills issued by merchants are saved in the electronic form within the payment application.

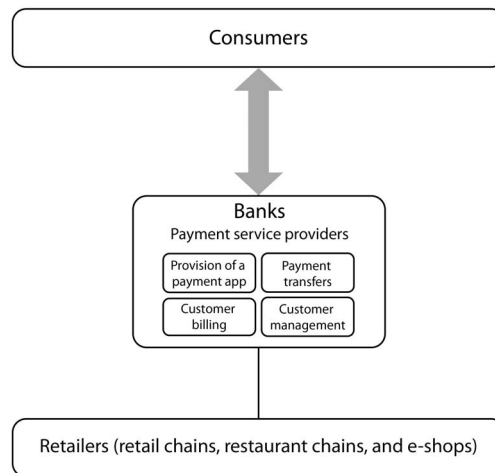


Figure 4. Actors and relations for Bart mobile payment solutions. The grey arrow indicates “billing relationship”.

4.3.1 Case of Axfood Company

In November 2012, Axfood started a pilot project trying the Bart payment service in three shops in Stockholm (Axfood, 2012b; Swedbank, 2012). It is announced that by April 2013 the service will be rolled out in 400 Axfood’s stores (including Hemköp, Willys, Willys Hemma, and PrisXtra) all over Sweden (Swedbank, n.d.).

4.4 Payair provided by Payair

Payair developed mobile payment solution uses QR-codes for payment transfers. The Payair application is linked to the user’s bank account or credit card. The relations between the main actors are presented in Figure 5. The payment service provider (i.e. Payair) handles the relation with the consumers. The mobile payment applications are directly linked to the bank accounts of the users; so, a relation exists between the service provider and the banks. The solution is used in physical shops and in online shops. The retailers issue bills via the mobile payment app.

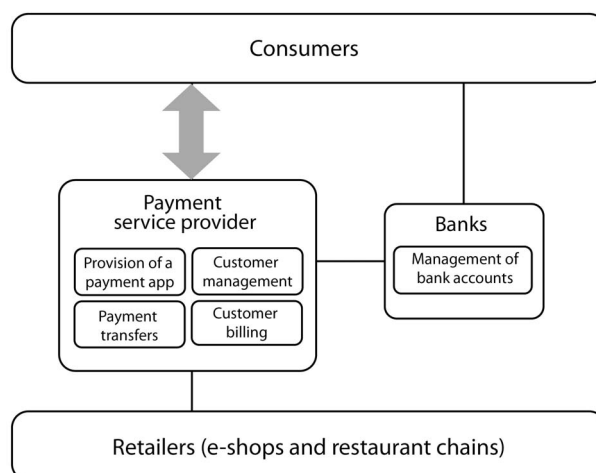


Figure 5. Actors and relations for Payair and ME mobile payment solution. The grey arrow indicates “billing relationship”.

4.4.1 Case of Best of Brands

The fashion chain Best of Brands is a chain of “multi-brand stories”. The chain has a long history starting from 1920’s. However, the company focused on offering a wide assortment of designer clothes much later⁵. The first specialized store was successful, and in 2005 another store of a size of 1000 m² was opened. Later it was expanded up to 2700 m² and became the biggest multi-brand mall in Nordic region⁶. Currently, the chain has four large physical stores (Payair, 2013a) and an online shop, which was launched in autumn 2011.

In March 2013, Best of Brands in cooperation with Payair and e-commerce expert Panagora have introduced a mobile commerce solution (Payair, 2013a). Best of Brands now brings its customers a new shopping experience (p-commerce): there is no need to go to the physical shop anymore. Printed supplements distributed together with the Swedish magazine Sofi’s Fashion allow purchases via mobile phones (see *Figure 6*). Consumers can buy clothes by scanning a QR-code printed on the ads with mobile phones and buy clothes directly in the ads.

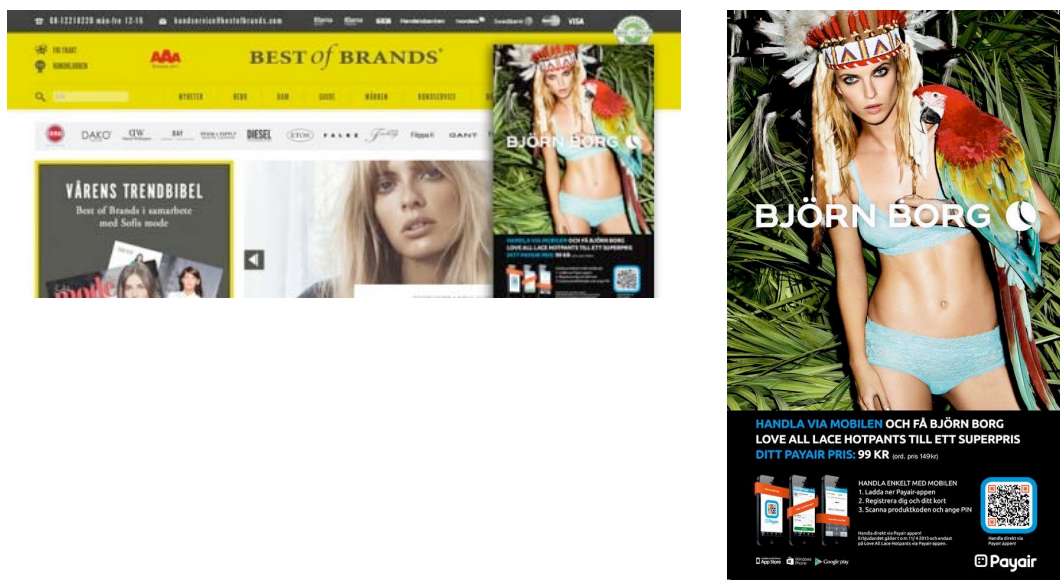


Figure 6. Best of Brands QR-code supplements.

The company perceives this solution as an opportunity to simplify the purchasing process and to improve customer service experience by shortening purchasing process (Payair, 2013a). At the same time, by introduction of this solution company expects to increase sales in other channels.

4.4.2 Case of Davids

Davids is a Swedish electrical retailer. In January 2013, the company in cooperation with Payair introduced a mobile payment solution on its online shop (Payair, 2013b). By this step, company expects to make a purchase process quicker and easier (Payair, 2013b). There also is an opportunity to purchase products by scanning QR-codes printed in media and billboards.

⁵ <http://bestofbrands.com/sv/content/view/best-of-brands>

⁶ <http://bestofbrands.com/sv/content/view/best-of-brands>

4.5 ME provided by Accumulate

The universal ME solution, developed by Accumulate, can be used for payments at PoS terminals. The solution covers all payment situations, payment solutions, and pairing technologies (NFS, SMS, OTT, QR- and barcodes), and is independent on mobile network operators (Accumulate, 2013). The installed ME application is linked to users' bank accounts or cards, in addition, there is an opportunity to leverage NFC functionality for payments (Accumulate, 2012). Point (a VeriFone company) is a provider of PoS terminals accepting cards and mobile payments performed with or without NFC (Accumulate, 2012). Relationship between the main partners is illustrated in *Figure 5*.

4.5.1 Chinese restaurant chain Beijing8

ME solution was chosen for a mobile payment test in several restaurants of Beijing8, a chain of Chinese restaurants (Accumulate, 2012).

4.6 Other Mobile Payment Solutions: In-app Payments

4.6.1 A Case of Bergendahls

Bergendahls retail chain is the fifth largest retail chain in Sweden with turnover exceeding 10 milliard SEK (Bergendahls, n.d.a). The company is focused on food, fashion, and home-furnishing goods with shops located in six countries. The company owns following grocery chains Den Svenska Matrebben, City Gross, ECO, and Matöppet; fashion chain Glitter; chain suggesting products for kitchen and dining Duka; and home-furnishing chain Granit (Bergendahls, n.d.a).

In June 2013, Bergendahls introduced a digital shop of City Gross chain idea in Kista science tower (Åkesson, 2013). Information about products together with corresponding QR-codes was exhibited on the screen – billboard (see *Figure 7*).



Figure 7. Digital shop of City Gross (Svensson and Hallberg, 2013).

In order to use the digital shop, a mobile app should be downloaded to the mobile phone. Then consumers can purchase needed products and items by scanning QR-codes. After completing the payment on-line, products can be taken either from the shop or delivered home by City Gross (Åkesson, 2013).

4.6.2 Mobile Payment Trial: Virtual Shop of MatHem.se

In August 2012, a launch campaign of an online grocery shop, MatHem.se, was performed in a form of a virtual shop in Östermalm, one of Stockholm's subway stations (Mathem, 2012).



Figure 8. *Virtual shop of MatHem.se (Mathem, 2012).*

In order to perform a purchase, a mobile app has to be downloaded to mobile phones. The developed solution is barcode based. Consumers scan barcodes with smartphone cameras (see Figure 8), and based on this information selected products are added to the shopping card. The goods are delivered to customers' homes in refrigerators with freezer by MatHem. One of the benefits of a virtual shop solution is opportunity to save time purchasing grocery and avoid queuing.

Summing up, there are a number of mobile payment solutions available in Swedish market: SEQR, Bart, Payair, and ME. When making a decision to invest in a mobile payment solution deployment, retailers can select several strategies: to take wait and see position, to partner with existing mobile payment providers, or to develop own solution. Retailers selecting to introduce mobile payments in their chains perceive these solutions as options to improve customers' purchasing experience making it easier and quicker (Seamless, 2013b; Payair, 2013a). An analysis of the overviewed cases is presented in the next section.

5 Analysis

Generalized results of the desk-top analysis will be presented in this section. The analysis is mainly focused on two aspects: mobile payment market and structure of investment costs.

5.1 Market Analysis

Currently, on Swedish mobile payment market there are several competing mobile payment solutions. It is possible to say, that, currently, the infrastructure of SEQR solution is the most extended. It is accepted by nearly 100 big and large retail and restaurant chains, and online shops, at nearly 800 stores and restaurants⁷ all over Sweden. Other competing solutions are accepted on a smaller scale or in the other areas (like transport ticketing, parking payments, or vending machine payments).

Availability of numerous competing payment solutions can lead to problems reaching a critical mass of consumers needed for mobile payment to take off. It might also become a source of a market fragmentation. The distribution of analyzed cases among mobile payment solutions is illustrated in *Figure 9*.

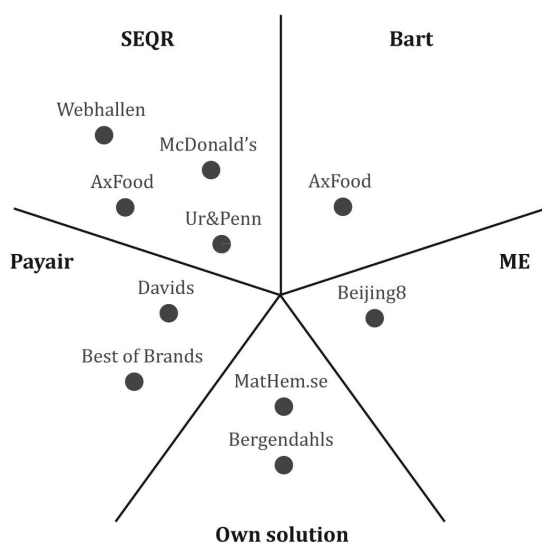


Figure 9. Distribution of cases among mobile payment solutions.

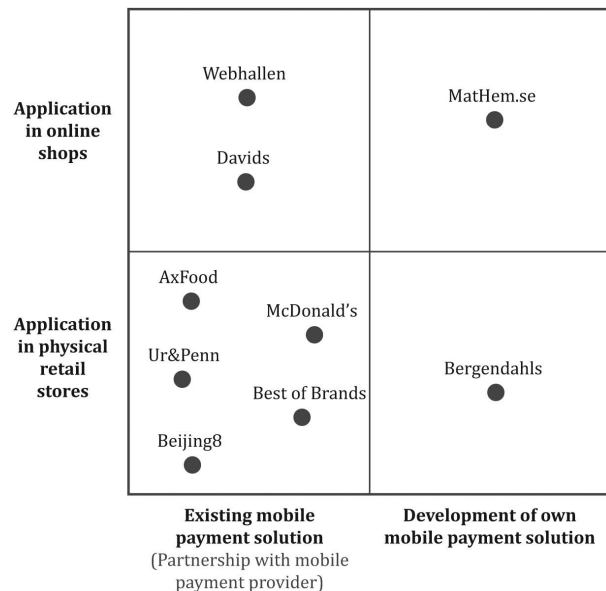


Figure 10. Classification of cases by application area and a type of used mobile payment solution.

In addition, the overviewed cases could be classified depending on the ownership of used mobile payment solution. Retailers can select several strategies: to use already existing mobile payment solution signing a partnership agreement with a certain mobile payment solution provider, or, alternatively, to develop own solution. Another classification dimension is application area: whether a mobile payment solution is deployed in a physical store or in an online shop. Classification is presented in *Figure 10*.

It is possible to notice that a number of large retailers and online shops deploying mobile payment solutions in physical stores select to partner with one or several providers of existing

⁷ <https://www.seqr.com/se/handla-med-seqr/>

mobile payment solutions. Development of own mobile application was a strategy for small-scale trial projects both in retail and online commerce areas. These solutions have very narrow applicability, being limited to just one retailer or just one pilot project.

Finally, the main mobile payment network parties in the analyzed cases are: retailers (that includes retail and restaurant chains, and online shops), mobile payment service providers (Seamless, Accumulate, Payair, and Swedbank), and banks or financial institutions that handle payment transfers. Analysis of relationship between main actors participating in mobile payment network indicates one important change (see *Figure 2*, *Figure 4*, and *Figure 5*): consumer billing is implemented via mobile payment app. This means that merchants have lost direct billing relationship.

5.2 Estimation of Investment Cost Structure

Estimation of cost structure has been based upon criteria mentioned in sub-section 3.2 *Research Approach*. In addition, the size of the initial costs also depends on the scale of the service deployment. The overview of several the most important types of investment costs (infrastructure and service development and deployment, and consumer time costs) in combination with the scale of a project are presented in *Table 5*.

The size of investment in mobile payment infrastructure and service development and deployment is proportional to the size of the deployment. The size of investment in the mobile payment deployment in 100 or more stores will be considerable, including the size of personnel training costs. Hence, the size of an organization and financial resources are important when making a decision to invest in a new payment solution.

Table 5. Overview of structure of investment costs.

Retailer	Infrastructure development and deployment costs	Service introduction and deployment costs and consumer time costs
Axfood	Big scale: SEQR: Installation of 2400 PoS in 380 shops Bart: A pilot project in 3 shops Installation in 400 shops Integration with a cashier system No mobile app development costs Agreement with providers	Big scale: Costs and time of personnel training Marketing campaigns: information in mass media Consumer time costs downloading the SEQR or Bart apps and learning costs
Webhallen	Small scale: SEQR: Integration with web-page payment system No mobile app development costs Agreement with providers	Small scale: Consumer time costs downloading the SEQR app and learning costs
McDonald's	Big scale: SEQR: A pilot project in 4 shops Installation of PoS in 130 restaurants ⁸ (planned 220) ⁹ Integration with a cashier system No mobile app development costs Agreement with providers	Big scale: Costs and time of personnel training Marketing campaigns: information in mass media Consumer time costs downloading the SEQR app and learning costs
Ur&Penn	Big scale: SEQR: Integration with a cashier system Solution available in 91 shop ¹⁰ No mobile app development costs Agreement with providers	Big scale: Costs and time of personnel training Marketing campaigns: Information in mass media Consumer time costs downloading the SEQR app and learning costs
Best of Brands	Big scale: Payair: Integration with a payment system No mobile app development costs Agreement with providers	Big scale: Consumer time costs downloading the Payair app and learning costs Marketing campaigns: printed supplements
 Davids	Small scale: Payair: web-shop purchases Integration of a web-shop with a payment solution No mobile app development costs Agreement with providers	Small scale: Consumer time costs downloading the Payair app and learning costs
Beijing8	Small scale: ME: 2 restaurants Installation of PoS Integration with a cashier system No mobile app development costs Agreement with providers	Small scale: Costs and time of personnel training Marketing campaigns: information in mass media Consumer time costs downloading the ME app and learning costs
Bergendahls MatHem.se	Small scale: Preparation and printing of materials of digital or virtual shops Development of a mobile app	Small scale: Marketing campaigns: information in mass media Consumer time costs downloading the app and learning costs

⁸ <https://www.seqr.com/se/handla-med-seqr/>

⁹ <https://www.seqr.com/se/2013/03/08/gott-att-ata-gott-att-betala/>

¹⁰ <https://www.seqr.com/se/handla-med-seqr/>

6 Conclusions

The main objectives of the ongoing research are to estimate both the main barriers and driving forces affecting the retailers' decision to invest in mobile payment service deployment. The main aims of the initial stage of the research have been to look into the current market situation identifying main players and estimating the structure of investment costs.

The results of a general market observation allow stating that more and more retail chains select to invest in mobile payment service deployment. And the most common strategy is to adopt already existing solution. However, competition existing between most common mobile payment solutions (SEQR, Bart, Payair, ME, and WyWallet) leads to market fragmentation. Hence, there might be a problem reaching a critical mass of consumers needed for mobile payment to take off. In addition, due to mobile payment solution deployment, merchants bill consumers using mediator – mobile application.

The size of investment in mobile payment infrastructure and service development and deployment is proportional to the size of the deployment. It is considerable for large-scale projects. Hence, the size of an organization and financial resources are important when making a decision to invest in a new payment solution.

From a consumer perspective, there is a big number of alternative mobile payment solutions provided by different actors and accepted in different retail or restaurant chains. This means a need to invest time into learning of these applications and management of multiple accounts. This might set barriers for consumer acceptance.

The main contribution of this paper is in addressing a problem of organizational acceptance of mobile payment solutions. Indeed, there have been a number of researches on mobile payment adoption by consumers, leaving the problem of merchant adoption under-researched.

The main limitation of the current research is usage of only secondary data for analysis of the current situation. However, primary information will be collected during the next research steps.

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7.1.1 Case of Euronics Sverige

SEQR mobile payment solution was integrated with the most popular cashier system, LS Retail. This system is used by Ur&Penn, a leading watch distributor in Nordic countries (Seamless, 2013c). This means that SEQR can be used without installation of additional equipment in shops.

Seamless, 2013c. *Betala hemelektroniken med mobilen via SEQR – Seamless i avtal med fackhandelskedjan Euronics*. [online] Press release, 3 June, 2013. Available at: <<http://ir.seamless.se/releasedetail.cfm?ReleaseID=768542>> [Accessed 31 October 2013]

In the initial interview with representatives of one retail company, security of the mobile payment solution and consumer acceptance and behavioural barriers were mentioned as main obstacles for mobile payment solution introduction. Unsuccessful experience of newly introduced WyWallet service can be another reason for retailers to take wait-and-see position.