“Exploring new methods of payment in the European vending market”
EXECUTIVE SUMMARY

CCV wishes to enter the European vending market with a new payment product. In order to best assess the future payment landscape that vending must deal with, this paper researches the developments in the European payment market in a multiple case study, investigating the most probable payment methods and generating conclusions through inductive reasoning. On the basis of these developments, a choice for the best market offering and accompanying business strategy is made. The research problem is formulated as follows:

“When considering the current European payment market, which new payment method will be adopted on a wide scale and how can CCV use this as a vending market offering?”

A theoretical model by Anderson & Narus is used due to its contemporary look upon business to business marketing, enabling it to offer valuable guidelines on how to establish an accurate marketing model for a new payment product. This is then filled in with research categories and qualifiers taken from Rogers and Narayanan. These qualifiers are used to compare the different payment alternatives and consist of: relative advantage, compatibility, ease-of-use, trialability, observability, prior technology drag, irreversibility, sponsorship, expectations, communications, opinion leaders, and cultural norms. Thus, different payment alternatives are compared, a dominant design is pointed out among the current technical possibilities, and advice is provided on creating a complete market offering.

Interviews and discussions form the source of primary data. Interviews are held with field experts following a pre-constructed form. Secondary data is gathered mainly through desk research.

Adoption statistics show that, although certain countries show a clear preference for either the credit- or debit card over the other, both cards show a trend of increasing adoption and use. Their growth figures show a steady rate of technological substitution, where plastic gradually substitutes cash. In the case of less developed countries the growth is more explosive, signaling a growth more in line with the bandwagon effect, where imitation leads to the adoption rate ‘taking off’. Both are therefore taken into account. As this paper considers the European market, the debit card of choice is naturally the European debit card. This card is represented by the Maestro and V-Pay brands. For the credit card, this paper will also consider the new standard: EMV, offering a chip as an alternative or in addition to the magnetic strip. Two other trends appearing and greatly backed by the stakeholders are contactless and mobile payment.

In summary, the following new payment methods seem most promising in terms of prospective customers and are considered in the paper.

- European debit card: Maestro and, similarly, the V-Pay brand;
- EMV credit card: the EMV compliant credit card, with or without magnetic swipe strip;
- Contactless debit/credit card: an EMV compliant debit or credit card with contactless NFC technology;
- M-payment: payment by mobile phone using NFC technology.

To compare these four, a field value assessment is done among field experts using the previously noted qualifiers. The results clearly favor contactless, where the contactless credit and debit cards score highest and m-payment follows in second. Third is the EMV credit card, as respondents find it expensive to implement in vending, and its transaction costs are perceived as quite high. Scoring the least preferable option, the European debit card shows low scores almost everywhere. Respondents all agree that the requirement for using a PIN-pad is not user friendly and took too much time.
Both NFC technologies are still in the early stage of adoption, with contactless credit cards in the early phase of adoption and m-payment in the trail phase. However, the enormous investments made in both technologies make a strong case of their developers and facilitators distributing them among consumers in a technology-push strategy. The expectations are high for contactless to be adopted on a large scale, with the credit card as the first contactless product. Speculation surrounding contactless acquiring a significant market share differ from the year 2011 to 2016, but in this research no individual or organization has been encountered who would dispute contactless as a payment method widely adopted in the near future. M-payment projections are confident, but dates are not often given. Also, the role of the TSM to adequately steer the development and adoption is still nonexistent. A clear business model for m-payment has still to emerge, but when it does m-payment will become a serious alternative to contactless cards.

It is expected that CCV will quickly be able to handle contactless credit transactions, thereby making use of the micropayment chip which is key to penetrating the vending market with contactless credit. This micropayment chip allows users to easily make small value payments without having first charge the chip and without having to input a code. Cardholder effort is the key, which is why vending operators are ready for contactless. In the future, the same contactless reader can then serve contactless debit transactions or m-payment. These multiple fields of application strengthen the conclusion of this paper.

Chapter 6 defines the best market segment, country, competitive- and pricing strategy to deliver superior customer value. The target market segment found is open-loop vending in companies and organizations, and in public vending. These segments will be targeted in Spain, Ireland, Portugal, the United Kingdom and Estonia. Also, Slovakia, Romania, Latvia, and Lithuania proved to be interesting growth regions. If CCV prefers trialing locally first, Belgium proves to be the best option.

In approaching these business markets, CCV can best adopt a competitive strategy of operational excellence, defined as “providing customers with reliable products or services at competitive prices and delivered with minimal difficulty or inconvenience”. (Treacy & Wiersma, p. 84) The pricing strategy must be one of flexible pricing, where CCV shares the value and risk of its offering with its customers as an incentive to purchase. Therefore it is best to develop a value model that charges a low sales price for the market offering and subsequently charges a small amount of money per transaction. This pricing combination first acts as a penetration strategy, and on a longer time span generates a higher turnover than a normal reader would. In selling this, the total value of the broad offering package must be emphasized.

To sell this offering, the approach of the value merchant who “recognizes the costs and value associated with each element of a market offering and seeks an equitable return for both the supplier firm and customer firm” (Anderson & Narus, 1999, p. 269) will show customers not only a good price, but the prospective value of the offering.

Further research must be done to address the different advantages that payment methods have to offer and use these to better qualify the currently too broad ‘relative advantage’ qualifier. Also, research must be done to find vending-specific and payment-specific data per country on a time scale, thereby adding Turkey, Switzerland, and France, who are now omitted from the conclusion, to the research results. Research must also be done to determine the importance of the market of closed payment systems to CCV. Finally, market research must be done to find the optimal flexible pricing of the market offer.
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**Abbreviations**

EFTPOS  Electronic fund transfer point of service

NFC    Near field communication (a contactless technology)

POS    Point of service

SE     Secure Element

TSM    Trusted Service Manager

VM     Vending machine
1 - INTRODUCTION

1.1 - BACKGROUND

CCV is an Arnhem-based Dutch company with great expertise in electronic payment- and loyalty systems and European offices in Belgium, Germany and Switzerland. Its core business is selling payment terminals and processing electronic payment transactions, and they pride themselves on doing so for fifty years now.

CCV products can be found as countertop electronic payment terminals (PIN or similar) in retail stores, bars and restaurants. Often, their electronic payment products are integrated in OEM devices such as public transportation ticketing machines or self-service petrol station pumps. More recently, CCV plays an important part in the Dutch implementation of a contactless public transport payment system known as the “OV Chipkaart”. As in the case of the OV Chipkaart, CCV constantly anticipates new possibilities in the European electronic payment market.

The European ‘unattended’ market is a new market of great interest to CCV. This market is comprised of all self-service points of sale, like ticketing machines for transport and vending machines (VM) for candy and soda. In the face of the current unification of Europe and the presumed effect this will have on the standardization of certain key processes and technologies, CCV focuses on a general European solution for VM payment. This topic is rather complex because of the great number of parties involved and the relatively small roll that CCV plays. Consequently, a study of the payment market for VM will also have to shed light on the motives and inclinations of related parties of influence.

As of now, the payment market in Europe is shifting towards the adoption of new technologies. The consensus is that cash will remain widely used long into the future. However, cashless and contactless payment methods increasingly play an important role in making payment easier. First, cashless methods such as debit and credit cards have been around for awhile now. A few years ago many countries in Europe introduced a stored money function on their bank’s debit cards: Holland has its ‘ChipKnip’, Belgium the ‘Proton’ card, Germany the ‘GeldKarte’ and France the ‘Mon€o’. But, for various reasons, these are rapidly losing popularity, opening up a demand for a suitable alternative for making small payments such as debit cards with a standardized European stored money function.

Second, contactless technology is finally ready to go mainstream. It can be applied to keyfobs or debit cards, but the broadest application so far seems to be the adding of a contactless function to credit cards such as MasterCard (Paypass) and Visa (Paywave). Another market of great opportunity is contactless payment by mobile phone, known as ‘m-payment’. There are strong indications that m-payment will become the predominant alternative to cash payment in the near future.

There are a lot of players all bargaining for a large stake in the next European payment standard, which causes great uncertainty. Identifying the motives of the dominant drivers and their preferred payment standard should shed light on the matter and in turn indicate which alternative CCV must choose.

1.2 - RESEARCH OBJECTIVE

First of all, CCV wishes to enter the European vending market with a new payment product. In order to best assess the future payment landscape that vending must deal with, this paper will research the developments in the European payment market. On the basis of these developments, a choice for the best market offering and accompanying business strategy is made.
CCV foresees a fork in the road of payment standards and would like to be able to anticipate on the most plausible future scenarios. Therefore, this report will explore which payment methods are to become a European payment standard. After mapping this out, the most foreseeable scenarios will be tied to the vending market.

CCV also wishes to be presented with information concerning the potential of the vending market and the best market entry strategy.

In conclusion, the scenario proven to be the best for CCV will be used as the basis for advisory recommendations concerning the execution and sale of a new payment product.

1.3 - RESEARCH PROBLEM AND QUESTIONS

The research problem is formulated as follows:

“WHEN CONSIDERING THE CURRENT EUROPEAN PAYMENT MARKET, WHICH NEW PAYMENT METHOD WILL BE ADOPTED ON A WIDE SCALE AND HOW CAN CCV USE THIS AS A VENDING MARKET OFFERING?”

This problem offers a perspective that is too broad to research adequately. To narrow the focus of this paper, the parameters are to be interpreted as specified in paragraph 1.4, Definitions.

The research questions are selected from issues that have arisen from the theoretical framework.

1. WHAT ARE THE MOST IMPORTANT NEW PAYMENT METHODS IN TERMS OF PROSPECTIVE CUSTOMERS?

2. WHAT OFFERING IS MOST PROMISING FOR THE VENDING MARKET?

3. WHAT MARKET SEGMENT, COUNTRY, COMPETITIVE- AND PRICING STRATEGY DELIVER SUPERIOR CUSTOMER VALUE?

1.4 - DEFINITIONS

CCV: Research is done for the CCV group. When referring to CCV without specifying an exact company or branch, this paper refers to the CCV group Van de Velden Holding BV and its daughters CCV Holland BV, CCV Cardfon nv/sa, EL-ME AG and CCV Jeronimo SA.

European (payment market): Research will cover every member of the Council of Europe, which also contains Turkey. In order to not overextend the research area, this paper shall disregard Russia, Armenia and Azerbaijan. Please note that Belarus is not a part of the Council of Europe due to its form of government (dictatorship) and is therefore also disregarded from this research. Accordingly, any mention of ‘Europe’ or reference to a ‘European market’ directly implies the aforementioned geographical area.

New payment method: A type of interface surrounding a money transaction and demanded by a certain (EFT)POS terminal. The term ‘new’ refers to the novelty of the solution in relation to the current payment standard (i.e. coins and bills).

EFTPOS: Electronic Funds Transfer Point Of Sale, a location where an electronic transaction (using different payment methods as for example debit or credit) occurs. Often refers to an EFTPOS terminal.

POS: Point Of Sale, or a location where a transaction occurs. Often refers to a POS terminal.

Payment market: The market of payment products (see also definition “New payment method”) and payment
standards, i.e. cash, cashless payment methods, and contactless payment methods.

**Vending market:** The vending market is bounded to 4C, full line and specialty VMs. This rules out office coffee services and related free-of-charge systems.

**4C (vending machine):** A known abbreviation for coffee, cup soda, candy and cigarettes. (Walkie, 2006)

**Full line VM:** Elaborating on the 4C’s, this segment offers a broader service like for instance hot canned food. (Walkie, 2006)

**Specialty VM:** Any niche market variant on the standard VM, vending products like consumer electronics or golf balls for a driving range. (Walkie, 2006)

**Vending machine:** Machine that provides service at an unattended point of sale through the use of monetarily-driven equipment. (Walkie, 2006)

**Vending market offering:** This would concern an OEM supplied payment solution, being a product of CCV and consisting of a reader of some sort and, if necessary, a PIN-pad.

**OEM:** Original Equipment Manufacturer, a company that uses or sells products made by a second company in its own product or under its own brand.

**PIN-pad:** Input device, resembling the keypad of a telephone. This enables the user to input a personal identification number or code, as well as any other relevant information, such as the number of his selected product.

**Reader:** In the case of most transaction alternatives to cash, the user will present a card, keyfob, telephone or similar to a device that authenticates the user and processes the transaction.
2 - THEORETICAL FRAMEWORK

2.1 - SHAPING THE THEORETICAL FRAMEWORK

In shaping the theoretical framework, two main aspects of research are considered.

First, Anderson & Narus’ business to business marketing framework is adapted to structure the basis of this research. Due to its contemporary look upon business to business marketing, it offers valuable guidelines on how to establish an accurate marketing model for a new payment product. Thereby, it offers a framework to analyze the available payment technologies, sense the market, and craft a market strategy. This is the main body of research used from Anderson & Narus (1999) provides the Understanding and Creating value framework that is broadly used in paragraph 2.2, Business to business marketing. As an addition, the article by Anderson & Narus (1998) discusses their views on creating a customer value model. It also proposes and describes the field value assessment, as done in paragraph 5.1, Field value assessment. Bartlett & Ghoshal (1988) are shortly referenced to address the point of a transnational market focus. Treacy & Wiersema (1993) are used to elaborate on Anderson & Narus’ Crafting market strategy part of paragraph 2.2.1, Understanding value.

Second, a model designed by Rogers (1995) and adapted by Narayanan (2001) is used to predict the technological diffusion of new European payment methods and assess their relative worth to CCV. Although the first theoretical source provides a framework to structure the research, Rogers and also Narayanan offer ways to put this into practice. First, they offer a concise list of stakeholder groups in 2.3.1, Process of technology change: innovation to form a basis for Anderson & Narus’ Market sensing research. Most importantly, they offer a complete group of qualifiers to do the field value assessment step of Market sensing. These qualifiers are first presented in 2.3.2, Process of technology change: diffusion, and then summarized in paragraph 2.4, Theoretical framework in conclusion. As one of three categories of qualifiers, the community effects brought forward by Narayanan (2001) are cited from original work from Fichman & Kemerer (1993).

By using the model by Anderson & Narus and filling it in with research categories and qualifiers taken from Rogers and Narayanan, this paper will compare different payment alternatives, point out a dominant design among the current technical possibilities, and provide advice on creating a complete market offering.

2.2 - BUSINESS TO BUSINESS MARKETING

Anderson & Narus define business market management as “the process of understanding, creating, and delivering value to targeted business markets and customers”. (Anderson & Narus, 1999, p. 4) In describing a correct approach to business to business marketing, a distinction is made between three business market processes as described by Anderson & Narus as “Understanding value”, “Creating value” and “Delivering value”.

To better integrate this theory with the research problem and research goal, the focus will be on the first two. Delivering value is disregarded. This is because Delivering value goes into too much detail about the job of the sales force, which falls outside the scope of this paper. To further stay within a certain focus, only relevant pieces of theory from Understanding value and Creating value will be used. These measures will result in an adaptation of the Business Market Processes model used by Anderson & Narus, as seen below.
2.2.1 - Understanding value

Understanding value comprises the first research step, which is divided into two parts.

**Market sensing**

Anderson & Narus start by defining the market by mapping out the current market segmentation and defining segments of interest. In this case, CCV has already decided upon our vending market segment as defined in paragraph 1.3, *Research problem and questions*. Segments of interest will be defined using statistical data obtained from the ECB, and by doing a stakeholder analysis using stakeholder groups defined in 2.3.1, *Process of technology change: innovation*.

Then, a customer value model is built. Customer value models are “data driven representations of the worth, in monetary terms, of what the supplier is doing or could do for its customers”, (Anderson & Narus, 1998, p. 54) hereby offering well-founded arguments for entering the market. Of customer value models, the field value assessment is said by Anderson & Narus to be the most accurate model. If possible, data is collected from customers firsthand. However, in cases where this is not feasible, as within this paper, “it is possible to gain a worthwhile understanding of value through such methods as direct and indirect survey questions, conjoint analysis, and focus groups, all of which rely primarily on customers’ perceptions of the functionality, performance, and worth of the supplier’s offering.” (Anderson & Narus, 1998, p. 55)

To do a field value assessment, some pre-research must be done. People with product, field engineering, marketing, and sales experience must be queried as to what they find important to learn from the field. Then, “anything that can affect the costs and benefits of the offering”, (Anderson & Narus, 1998, p. 55) called value elements must be listed. Considering the whole life-cycle of the offering, an inclusive list of elements (be it technical, economic, service, or social in nature) must be made. This list is obtained from qualifiers presented in 2.3.2, *Process of technology change: diffusion*, and summarized in 2.3.3, *Technology diffusion qualifiers in summary*. The next step is to gather data. This is done by finding out what the worth is of each value element in the list. The monetary value of, for instance, social elements, is not easily measured. Instead, they can be discussed in a qualitative way together with the additional quantitative results. Also, as Anderson & Narus point out, people are better at making comparative than making absolute judgements. This will be considered in soliciting data. Afterwards, as in all field analyses, some assumptions must always be made in order to complete the analysis. These assumptions mostly are about elements that are particularly difficult to measure. This altogether will result in a database with value estimates and individual customer characteristics called descriptors. Conclusions can then be made on the basis of value estimates weighted customer descriptors as to providing the superior value to the most prospective customers.
Crafting market strategy
In order to decide where and how to create and deliver value, the firm must find the correct business strategy context for a certain marketing strategy. To do this, Anderson & Narus have created a framework.

First, a firm forms a business strategy by understanding what resources it has and how it can best exploit them in one or more fundamental value-based business strategies. Of these, product leadership means “offering customers leading-edge products and services that consistently enhance the customer’s use or application of the product, thereby making the rivals’ goods obsolete”. (Treacy & Wiersma, p. 85) Customer intimacy means “segmenting and targeting markets precisely and then tailoring offerings to match exactly the demands of those niches”. Operational excellence means “providing customers with reliable products or services at competitive prices and delivered with minimal difficulty or inconvenience”. (Treacy & Wiersma, p. 84)

After the above Anderson & Narus hope to have formulated the firm’s strategic intent. The second step is to bring this into practice in a strategic plan. This is formed by answering three main questions (“what do we know”, “what do we want to accomplish”, and “how will we do it”). The word “know” is emphasized because it is imperative to “distinguish between what is known, what is believed, and what is wished to be believed” (Anderson & Narus, 1999, p. 135). In markets with considerable uncertainty, it is advisable to construct scenarios of plausible future situations. When analyzing scenarios, specific pre-defined milestones act as a warning of the reality of the scenario.

2.2.2 - Creating value
Management of market offerings puts the value that vending market payment products represent for CCV and the question of how to obtain this value into practice.

Managing market offerings
This is “the process of putting products, services, programs, and systems together in a product package that creates the greatest value for targeted market segments and customer firms.” (Anderson & Narus, 1999, p. 161) In this context, flexible market offerings are offerings that are necessary in today’s market to accommodate customers’ individual needs. These might be essentially the same in most respects, but will differ when it comes to the details. To deal with these needs, flexible market offerings present naked solutions and in turn wrap these up with options. These are constructed by assessing customer value and supplier cost for each service.

A strategic view is given on pricing called value-based pricing, this is used to share created value with customers and also serves well in harmonizing prices across the borders of Europe.

In business markets, customers predominantly focus on functionality or performance. Value is used to express these two terms, the expression in monetary terms of what the customer firm receives in exchange for the price it pays for a market offering. This can be defined in an equation known by Anderson & Narus as the “fundamental value equation” (Anderson & Narus, 1999, p. 188), which compares product f (Offeringf) to the next best alternative a (Offeringa).

\[(\text{Value}_f - \text{Price}_f) > (\text{Value}_a - \text{Price}_a)\]

The difference between the two terms is known as the “customer incentive to purchase”. However, rearranging this equation gives a clearer representation of how customer firm managers decide between two offerings.

\[\Delta \text{Value}_{f,a} > (\text{Price}_f - \text{Price}_a)\]
The difference between Value\textsubscript{1} and Value\textsubscript{2} represents the incremental value Offering\textsubscript{1} provides over Offering\textsubscript{2}. This leads to the main strategic decision: whether to retain the incremental value as profit (known as a skimming pricing strategy) or share it with the consumer as an incentive to purchase (known as a penetration pricing strategy). In the case of the former, the firm intends to make its overall profits through selling fewer units at a higher profit per unit, whereas the case of the latter sees the firm intending to make its overall profit through selling a larger number of units at a lower profit per unit. As a side note, to provide an incentive for a firm to change over to another firm’s product, an additional portion of the incremental value must be given.

Considering market strategy from a global perspective is an important part of value creation. For one, it is important to be able to step back from the home market and take an unbiased view on which of the domestic and foreign markets are relatively important to the firm. This is called an equidistance of perspective. Furthermore, the development of transnational capabilities should be emphasized: “the ability to manage across national boundaries, retaining local flexibility while achieving global integration.” (Bartlett & Ghoshal, 1988) Another implication of doing business across borders is that the next best alternative (Offering\textsubscript{2}) can change. A possible solution, called pricing bandwidths, concerns pricing at “an agreed upon range around a target price”. (Anderson & Narus, 1999, p. 195) However, despite these transnational issues, there is a probable expectancy for unified pricing when doing business in the European Union. Therefore, it may be wise to move to a single European price, expressed in Euros.

As a final thought, Anderson & Narus state in Harvard Business Review, “In cases where the supplier’s new offering will introduce technology into the market (...) a value model can demonstrate to prospective customers how the technology can provide greater value for them. This is an especially critical point when the price of new technology makes the market offering itself more costly than the alternative choices, which may use more established and familiar technologies.” (Anderson & Narus, 1998, p. 64)

**Business channel management**

Anderson & Narus describe the process of business channel management as “the process of designing a set of marketing and distribution arrangements that fulfil the requirements and preferences of targeted market segments and customers...” (Anderson & Narus, 1999, p. 250) This is however too broad for this research, which is why its description of value merchants is only covered.

CCV will market their offerings directly to customer firms rather than to consumer counterparts. This means that there are fewer customer firms, but they will probably each buy a plural amount of products for each order. That is why it is best to serve the customer directly. Also taking the value-based market approach into account, this means that the sales force has to be comprised of so-called value merchants. Anderson & Narus describe a value merchant as someone who “recognizes the costs and value associated with each element of a market offering and seeks an equitable return for both the supplier firm and customer firm”. (Anderson & Narus, 1999, p. 269) The value merchant does not needlessly cut prices or give away extra services for free to gain a sale. They don’t sell price, they sell value.

**2.3 - TECHNOLOGICAL DIFFUSION**

After using Anderson & Narus to establish a solid basis for value marketing research, what is needed next is a framework to aid in predicting the right payment method to base a market offering on. Therefore, literature by Rogers with later contributions by Narayanan is used to predict technological innovation and its concurrent diffusion or adoption.
2.3.1 - Process of technology change: innovation

Major technological change does not occur within a single firm. Rather, a whole network of firms and organizations come into play. To cite Narayanan: “at the level of a specific technology (product or process), technology change displays evolutionary dynamics that are not controlled by a single firm.” (Narayanan, 2001, p. 64) And, although an innovation, such as a new method of payment, is difficult if not impossible to predict correctly; once a technological development arrives at a certain point, its adoption displays predictable patterns. To bring these patterns into a usable framework, Narayanan discerns five sets of stakeholders that drive technological evolution. (Narayanan, 2001, p. 65) They are used to find market segments of interest in the Market sensing part of Understanding value, presented in 2.2.1, Understanding value.

- Technology developers, which typically are firms involved in innovation in their pursuit of competitive advantage;
- Technology facilitators, who may provide the resources for financing and executing innovation efforts;
- Customers who are interested in the fruits of technology, development and who will shape the direction of development;
- Regulatory agents, the governmental bodies and others who shape the form of products and processes by establishing standards or specifications; and
- Other stakeholders, who may be the beneficiaries (e.g., suppliers to the innovating firms) or victims of the technology change (e.g., industries likely rendered obsolete by the technological change).

The stakeholders participating in evolutionary dynamics of innovation face a large degree of uncertainty. Because the innovation process is largely driven by the exchange of information, stakeholders attempt to find relevant information to reduce uncertainty. However, the search for information embedded within a specific innovation is governed by something called technological insularity. This is a principle that suggests that “a characteristic feature of technical know-how is that it is not easily transmitted”. (Narayanan, 2001, p. 83) This arises due to three factors:

- The difficulty of transferring first-hand knowledge, which happens by the process learning by doing, where knowledge is shared among a growing number of people;
- The search costs involved in accessing technical information, based on the presumption that in the early stages of development, most technical information is costly and difficult to attain; and
- The difficulty involved in unlearning or abandoning old concepts, following from common human nature that technology acceptance is a process.

Finally, Narayanan points out globalization, time compression (the necessity to react quickly to the market) and technology integration (seeking competitive advantages through cooperation with other firms) as the three environmental factors of influence for innovation.

2.3.2 - Process of technology change: diffusion

According to Narayanan, “individuals or firms comprising the market (...) adopt [an innovation] sequentially over time.” (Narayanan, 2001, p. 98) The S-curve of diffusion serves as a graphic representation of this sequence. It sets out the number of customers to the adoption time, graphing market size and adoption speed. This mostly illustrates all four adoption phases: emergence, rapid growth, slow growth, and maturity. Two mechanisms of diffusion known as Technology substitution and the bandwagon effect dictate this S-shape.

Technology substitution refers to the replacement of old technology with the new. This happens gradually because of the initial widespread use of the old technology and reliability problems that can often hamper new
technology. The “diffusion of an innovation is a process of co-evolution of old and new technologies, involving numerous changes in their performance characteristics.” This means that adoption can be slow at first, but then quickly grows as the new technology proves to outperform the old. Finally, when the new technology is adopted by everyone, the market is finally saturated.

The bandwagon effect is about imitation, where in the later stages of adoption the group that has not adopted the technology imitates the one that has and therefore jumps on the bandwagon by adopting the new technology as well. This effect explains the speed of diffusion: where the new technology becomes popular enough that knowledge about it spreads through interpersonal and (inter)organizational user and non-user networks, the adoption ‘takes off’.

Technology substitution and the bandwagon effect are commonly driven by the reduction of uncertainty by information distribution and learning. “Learning plays a role in the improvement of performance characteristics of an innovation; uncertainty reduction unlocks the door to propagation of an innovation through an adopter population.” (Narayanan, 2001, p. 104)

Decision to adopt
Rogers presents a five-step model of adoption used to best predict the technological diffusion of innovations, in this case, new European payment methods. The five stages in the decision to adopt are the knowledge, persuasion, decision, implementation, and confirmation stage. In the first stage, a customer gains understanding of a new innovation by being exposed to an innovation’s existence thus acquiring relevant knowledge. In the second stage, the customer forms a favourable or unfavourable attitude toward the innovation. This is used for the third stage, where the decision whether or not to adopt is made. The fourth and fifth stages respectively concern customer implementation and evaluation of an innovation.

Rogers’ work is used in this paper to obtain a concise list of qualifiers that can be used to predict the adoption of payment innovations. To do so, this paper will go into detail about the first two steps, knowledge and persuasion, which logically lead to the third step, decision.

Persuasion stage and factors that drive the diffusion process
Whereas the Knowledge stage is about knowing, this stage is more about feeling. Here, three groups of qualifiers are obtained that serve as the basis for the field value assessment made in the Market sensing part of Understanding value, presented in 2.2.1, Understanding value. Within the Knowledge stage, the user is required to think hypothetically, projecting the thought “what if I use this innovation” into the future. In order to form a favorable decision toward an innovation, firms must feel that the innovation is the best solution for the problem at hand. To do this, users may search for evaluative information in interpersonal business networks. This information can be divided into five types of innovation attributes (Rogers, 2003, p. 223):

- Relative advantage: comparing innovations with the current situation or alternatives
- Compatibility: fitting into existing systems and values
- Ease-of-use: also referred to as the level of complexity
- Trialability: the possibility of trying the innovation on a limited basis first
- Observability: the visibility of innovation results to others

In general, an innovation which scores higher on all points will adopt at a faster rate than its competition. Narayanan states that “relative advantage, compatibility, and complexity address the costs and benefits of an innovation. Individuals or firms are more likely to adopt innovations that (1) offer clear advantage, (2) do not drastically interfere with existing lifestyle or organizational patterns, and (3) are easier to comprehend.” (Narayanan, 2001, p. 109) However, “trialability and observability are both related to risk. Adopters look
unfavourably on innovations that are difficult to put through a trial period or whose benefits are difficult to observe. These characteristics increase uncertainty about the innovation’s value and thus raise the risk of a decision to adopt.” (Narayanan, 2001, p. 110)

Other subjects of influence to the adoption of an innovation are community effects and network externalities. These are associated with three benefits necessary for large scale adoption. First, “a technology’s performance ratio improves rapidly as a community of adopters (vendors and users) accumulate experience in developing and applying the technology.” (Narayanan, 2001, p. 110) This is called learning by using. Second, positive externalities or network benefits are the benefits that grow as the user base grows. Third and most relevant for CCV and the vending market, a large base of compatible supporting technologies increases the scope and thus the economic potential of an innovation. This is called technological interrelatedness. These three subjects are all driven by the following factors (Fichman & Kemerer, 1993, p. 10):

- Prior technology drag: the unwillingness to adopt when an older technology with an established adoption network is still being used, despite greater long term benefits for the new technology
- Irreversibility of investments: a greater investment means a bigger risk
- Sponsorship: organizations, for instance, who promote the adoption of an innovation
- Expectations: if enough firms and organizations hold positive expectations for the adoption of a new technology, their combined positive attitude will facilitate in making it happen.

The status-quo is favoured by the first two, prior technology drag and irreversibility of investments. However, if sponsorship and expectations for a new technology are high enough, the balance will tip and a new technology will have a large adoption chance.

Finally, it is also of importance to consider the three characteristics of the population to predict the adoption of an innovation.

- Communications: because more information leads to less risk, de adoption of a technical innovation relies on technical expertise of both personnel in firms and consumers amongst the public. This bears close relation to the ‘not invented here’ syndrome, where firms with relatively little communication with the outside world prove to be less innovative.
- Opinion leaders: dubbed the “two step flow of communication” in diffusion: the first step in the process is the innovation’s being adopted by opinion leaders who, in the second step, transmit it to others in the system.” (Narayanan, 2001, p. 115)
- Cultural norms: variations in culture must be taken into account in the respect that predictions must be made concerning norms that largely impede or speed up diffusion of an innovation.

2.4 - THEORETICAL FRAMEWORK IN CONCLUSION

The application of the theoretical framework finds its origin in the Business Market Processes model used by Anderson & Narus and addressed in paragraph 2.2, Business to business marketing. This framework is split into the two subcategories Understanding and Creating value. These two are used to generate and analyze data for chapter 4, Payment methods described chapter 5, Payment method choice, and chapter 6, Market entry method.

As an introduction into chapters 5 and 6, chapter 4 does not make use of the theoretical framework. Instead, it uses quantitative data, qualitative data, and inductive reasoning to answer the first research question, “What are the most important new payment methods in terms of prospective customers?”
Chapter 5 addresses the second research question, “What offering is most promising for the vending market?” In order to draw grounded conclusions, a field value assessment as described by Anderson & Narus in paragraph 2.2.1, *Understanding value* is done using the payment methods that have resulted from chapter 4. This assessment is done in survey form, and respondents are asked to assess the payment methods on different qualifiers. These qualifiers play a key role in this research, and are taken from paragraph 2.3, *Technological diffusion*. There are three levels to assess value: innovation, community, and population, each with their own set of qualifiers. These are summarized in Table 1. Five sets of actors that drive technological evolution (see: paragraph 2.3.1, *Process of technology change: innovation*) are used to define stakeholders and their motives in paragraph 5.1.2, *Community qualifiers*. Finally, conclusions are made on what offering provides the superior value to the most prospective customers.

To sum up the first two research questions, qualifiers from Table 1 are used to assess the payment products resulting from the first research question. These qualifiers serve as the basis for the field value assessment survey done to discern which technology provides superior customer value. This assessment results in an answer to research question 2 in chapter 5, as presented in quotes and in the ranking of payment products in Table 8.

<table>
<thead>
<tr>
<th>Innovation</th>
<th>Community</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative advantage</td>
<td>Prior technology drag</td>
<td>Communications</td>
</tr>
<tr>
<td>Compatibility</td>
<td>Irreversibility</td>
<td>Opinion leaders</td>
</tr>
<tr>
<td>Ease-of-use</td>
<td>Sponsorship</td>
<td>Cultural norms</td>
</tr>
<tr>
<td>Trialability</td>
<td>Expectations</td>
<td></td>
</tr>
<tr>
<td>Observability</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1

Chapter 6, *Market entry methods* deals with the third research question, “What market segment, country, competitive- and pricing strategy deliver superior customer value?” Theory from Anderson & Narus is used from both paragraphs 2.2.1, *Understanding Value (Market sensing and Crafting market strategy)*, and 2.2.2, *Creating value (Managing market offerings and Business channel management)*. As called for in *Market sensing*, the market is defined and segment choice is made. Then, *Crafting market strategy*, *Managing market offerings*, and *Business channel management* addresses the strategic intent and provides guidelines to create a competitive- and pricing strategy.
3 - METHODOLOGY

3.1 - RESEARCH APPROACH

Because the purpose of this research is to explore the European payment market, anticipate the most plausible evolution path of the market, and subsequently conclude which payment method is best for the European vending market, the research is mainly explanatory. Explanatory research can be done in an experimental way. However, this approach would require manipulation and isolation of variables, which is not possible in the context of the European payment market. Instead, payment methods are researched in a multiple case study, investigating the most probable payment methods and generating conclusions through inductive reasoning. All data collected is analyzed using the theoretical framework. Together, this analysis will address the research questions and ultimately solve the research problem.

There are different approaches that can be taken in order to choose the right type of payment product for CCV to market. Options may be assessing it from a vending operator’s side, seeing them as the customer and thus assessing this group as the target market, taking the wishes of this customer into account in proving advice on the best product offer. Similarly, the consumer who uses the VM can be seen as the focal customer. However, as CCV heavily relates its success to the amount of sales, the most important consideration is that the eventual product has the most prospective customers. In other words, the new payment method alternative that attains the largest user base in the future will most likely also be the best choice for CCV.

In summary, to choose the product type, the focus of this paper is chiefly on the future adoption of new payment methods. The wishes of stakeholders (i.e. vending operator, customer etcetera) will be considered as success indicators. Then, to complete the value model of the market offering, the vending operator is logically seen as the customer.

3.2 - DATA COLLECTION

First, qualitative and quantitative secondary data is gathered mainly through desk research. Quantitative data on the use of current and new payment methods is assessed over a time scale. Although time horizon of most research is cross-sectional, meaning it investigates a particular phenomenon at a particular time, being present time, some research is done over a period of the year 2000 to the latest available data, in order to establish certain trends. Qualitative data is also used to find patterns and trends pointing in favour of the adoption of a particular payment method. Second, interviewing different stakeholders will generate primary data used to choose a payment method.

3.2.1 - Primary data

Interviews and discussions form the source of primary data. Interviews are held in either a formal or in an unstructured manner. Among the unstructured interviews are discussions with CCV colleagues, as well as talks held at the Cartes 2008 trade show in Paris. The latter offers initial insights into the European payment market, where inquiries are made into the commercial views of various stakeholders, including some connected directly to the vending market.

Formal interviews following a pre-constructed interview form are held with field experts. It may be noted that questions that require expertise from a specific field are only presented to certain respondent groups. For instance, specific financial questions are only used in interviews with a bank, whereas specific vending-related questions will be used in interviews with vending operators. Also, if answers given were insufficient or it
seemed the interviewee had more information on the subject, the interviewer stimulated the interviewee to elaborate on certain answers through follow-up questions. Although this method adds an unstructured aspect to the interview, its overall effect hailed more usable data. The interviews are recorded to ensure accurate transcription. The interviewees are:

- Sales Manager of vending operator Jaski Automaten, Marco Brouwer
- International Business Director of vending operator Maas International, Martijn van den Hazenkamp
- Senior Product Manager of Rabobank, Peter van Woezik
- Chief Executive Officer of CCV Belgium, Dimitri Beck
- Vice President of CCV Germany, Günther Froschermeier
- Chief Executive Officer of CCV Switzerland, Jean-Marc Fillistorf

The interview design can be seen in paragraph 9.1, Interview design; it is set up in four parts.

1. Creating a context is aimed at finding out some basic personal and professional aspects of the subject that may lead to a certain bias. In this way, a context is created for qualitative answers. This is not so much a part of grounded theory as it is an introductory familiarisation phase. If, however, the subject has a particular bias or interest towards a payment method, this is considered in using his input for analysis.

2. New payment methods valued asks the subject to value the four payment methods that result from the first research question using qualifiers on a 5-point Likert scale. This is done for every four new payment methods considered. The qualifiers are taken from Narayanan’s theory as described in paragraph 3.2.2, Process of technology change: diffusion and can be subdivided into three groups: innovation, community and population. For the sake of clarity, and to build a case to replace the current payment standard (cash), the ‘relative advantage’ qualifier was split up into the relative advantage compared to cash, and comparing the four alternatives amongst another. The overall result will indicate, with strong theoretical basis, which new payment method is seen by field experts to be largely adopted and used in vending.

3. Vending market specific as well as Debit card, Credit card, Contactless, M-payment and Final thoughts all pose open questions. These serve as elaboration on answers given in New payment methods valued. For the most part, questions selected are popular discussion points found in trade literature and other secondary data. Other questions arose after desk research as described in chapter 4, Payment methods described, when deficient or missing information could be identified.

4. In S-curve of diffusion the respondent is requested to draw, for each new payment technology, his view of its S-curve of diffusion as discussed in chapter 3.2.2, Process of technology change: diffusion. This provides a graphic interpretation of his expectations concerning diffusion and largely serves a control function: it verifies accuracy and consistency of statements made earlier in the interview.

5. Final thoughts serve to positively end the interview with two open questions stimulating creative answers and possibly a debate. Thus, the interviewee is challenged to think ‘out of the box’ and might provide interesting information not yet given in the interview.

3.2.2 - Secondary data

Secondary data is gathered mainly through desk research. Printed literature is acquired from various sources such as research reports and trade magazines. Articles, presentation files from the 2008 Payment Systems Conference from the EVA (European Vending Association), trade reports, newsletters and brochures all form relevant secondary data. Also, quantitative data about payment methods in Europe is collected over a period of the year 2000 to 2007 through the European Central Bank’s Statistics website.
Research reports


Trade magazines

Many trade magazines have been read to establish a basic understanding of the payment market. In the end, articles from Fitzgerald (Technology Review, 2006, August 24), Ghahremani (CFO Magazine, 2008, October), and a number of articles from various issues of Mobile Payments Update are cited in this paper.

General articles

Hensen (NRC Handelsblad, 2007, August 29) is cited for cash transaction statistics, and Walkie (2006) is used to establish a number of vending-related definitions in paragraph 1.4, Definitions.

Field experts

As an expert in the field of hospitality and vending, many citations stem from articles by the NAMA-endowed professor in hospitality business of the University of Massachusetts, M.L. Kasavana. The NAMA is the North American trade organization for retail vending. Also, data from an interview of a key employee of MasterCard by Hahn (2008) is used.

3.3 - DATA ANALYSIS METHODS, VALIDITY AND THREATS

3.3.1 - Analysis methods

Secondary data is analyzed in chapter 4, Payment methods described. This chapter provides a ‘within case analysis’, where each payment method is individually analyzed. To then compare these methods using primary interview data together with secondary data, a ‘cross case analysis’ is done in chapter 5, Payment method choice.

To answer the three research questions and, ultimately, the research problem, the following methods of analysis are used.

Interview data is used in two ways. First, the New payment methods valued part is quantified by converting the 5 point Likert scale (strongly disagree, disagree, neutral, agree, strongly agree) to the respective values -2, -1, 0, 1, 2. Input for each question is averaged to provide a value of accordance, which is summed up for each payment method. As this methodology does not stem from a proven method of research, the outcomes equal to 1 or greater are considered a significantly positive signal from the respondents and thus tallied and presented together with the summed up averages. These values are presented in Table 8.

The remaining interview data is used together with the secondary data from desk research in quotes to illustrate the present market situation and general expectations for the future. As the respondents are considered field experts, it was important to let them answer freely and out of their own experience. Therefore, responses are analyzed and effort is made in order to only extract ideas and opinions that are shared by the majority of respondents. To provide transparency, all quotes are printed with their source.

Quantitative data on the use of payment methods from the European Central Bank’s statistical warehouse is selected, focused, and simplified in order to best draw conclusions by inductive reasoning. Of this data, the total amount of cards, number of transactions, average transaction amounts, and amount of EFTPOS (Electronic Funds Transfer Point Of Sale, a location where electronic transactions occur) terminals is used and
compared per country and payment type. Demographic statistics such as GDP or population size are used from the same source in order to put certain measurements in perspective (i.e. by comparing country payment statistics per capita).

3.3.2 - Reliability and validity

Throughout the research process, the reliability of this paper has been considered. A large threat to the reliability is primary data gathered from the interviews. This is due to the open-ended nature of most questions and the free way in which respondents were encouraged to speak out. However, by using all quotes within the context and only when proven to be supported by the majority of respondents, reliability is improved. Furthermore, all interviews were recorded and played back in order to correctly document all data.

Secondary data also poses a threat, be it a lesser one. As all sources are in print, risks of misquotes and wrong interpretations are greatly reduced. Threats caused by lesser quality sources such as newspapers were considered in gathering sources and, subsequently, relevant data. Information from less reliable sources is cross-verified with other sources and its reliability can be therefore perceived as satisfactory.

The validity of this paper can be divided into internal validity, external validity, and context validity. As internal validity only concerns causal, experimental research, it is disregarded for this non-experimental paper. The external validity relates to the possibility of generalizing research findings. The samples this paper has drawn from are the interviewees. Although the sample size is very low at six people, all are considered field experts, thereby individually speaking for an organization or a large number of people. To accurately generalize their data to the whole population, trends and patterns are found. These are subsequently matched to those found in secondary data and in the literature. However, it must be considered that this multiple case study research is mainly qualitative and small-scale. Therefore many findings have been placed in the recommendations section, as they were too unsupported to be considered the conclusions of this paper. Finally, statistical data concerning France, Switzerland, and Turkey was often incomplete, leading to the exemption of these countries from the conclusion.

Finally, construct validity relates to when data stems not from what is being studied, but from the research method itself. In other words, choice of methodology in this paper is done in such a way, that it does not compromise the integrity of the research. This greatly overlaps what has been discussed above, such as the limited sample size versus data and pattern recognition and matching, and documentation errors versus the recording of interviews. Other risks are when respondents exaggerate or do not tell the truth. To aid in reducing this risk, three of the chosen field experts shared CCV’s interest and the other three were considered in advance to be either biased or not. If some bias following from, for instance, a commercial interest was foreseen, this was then monitored and, if apparent from answers, discussed during the interview.
4 - PAYMENT METHODS DESCRIBED

This chapter serves to answer the first research question: "What are the most important new payment methods in terms of prospective customers?" Therefore, an overview is given of those new payment methods that are deemed significantly important to CCV and the vending market. Niche products or ideas for the far future are disregarded to favor payment methods with a high likelihood of wide-scale adoption.

The payment methods are presented below in three sections. First, cash is presented and its disadvantages are discussed to create a basis for the introduction of cashless payment. This cashless payment is discussed second, and its contactless variants are found in the third section. Because of the complexity of the payment market, the wide adaptation of any technological breakthrough is always discussed extensively far before any market action. Therefore, the following information is considered general knowledge within the European payment market. At the end of this chapter, the most important new payment methods are chosen.

4.1 - CASH PAYMENT

As far as the vending machine goes back in history, coins have been used as the primary means of payment. They are an accepted means of payment anywhere and they have their own place in everyone’s wallet. “Cash provides simplicity, anonymity, immediacy and finality.” (Bolt, 2006, p. 349) Because of its extremely widespread use, vending operators consider coins the preferred means of payment. However, as technology develops and migrates payment standards to an electronic form, a number of disadvantages that were previously accepted by vending operators now place considerable weight on the decision to remove coin acceptors from vending machines in the near future. Among the most important disadvantages:

- Consumers must have enough coins on them and are often required to give exact change;
- Coin payment takes relatively long;
- Coin acceptors need to be emptied and serviced often, leading to high maintenance costs;
- Emptying the coins is often done by two operators, in order to prevent theft from either an operator or a bystander, leading to even higher maintenance costs;
- Coins must be transported to the operator, another source of costs;
- Coin acceptors collect dust and are prone to vandalism, leading to jams;
- Coin acceptors are imprecise, leading to wrong (foreign) coins being seen as correct payment.

In addition to coin acceptors, bill acceptors are also often installed, be it mainly in ticketing or parking machines. These are complex machines that accept, identify and change bills. Operators install these in order to accommodate the user in making larger payments. Both coin and bill acceptors cost around 400 euros when bought in a batch, but it must be noted that prices can vary in accordance with quality.

A main trend can be distilled in that making cash payments is slow, high on maintenance and expensive. It is estimated that in the EU, the handling and logistical costs associated with cash payments annually approach 50 billion euros. (Van ’t Hof & Schilpzand, 2008, p. 28) And although in the EU, 82% of transactions in shops are still conducted using cash, (Hensen, 2007) the amount of EFTPOS terminals in Europe has grown 64% from the years 2000 to 2007 (ECB, 2009).

The points stated above along with the European adoption of new payment methods have contributed to the need for this paper. Cash has long been the payment standard and its role as payment method for VMs is not over yet; however it is clear that it will be replaced in the future. As Jean-Marc Fillistorf, CEO of CCV Jeronimo,
points out: “consumer perception of the vending machine is currently very bad because of trouble related to coin payment. The effort is too big and it doesn’t make life easier.”

4.2 - CASHLESS PAYMENT

For the sake of retaining a good overview, a distinction is made between cashless payment and contactless (cashless) payment. In this second section of chapter four, cashless payment systems that require contact are discussed. These systems vary from credit or debit card settlement to stored value cards such as prepaid cards.

Cashless payment systems, sometimes referred to as e-money systems, are often associated with card readers. This is a correct association, as the user is often required to insert a card. A debit or credit is then charged on a magnetic strip or chip and a product is issued. In the case of debit cards, the user concurrently enters a PIN code after inserting a card in order to validate identification.

Cashless payment can be divided into two categories, the so-called ‘open’- and ‘closed system’. An open system is often governed by a body of law such as a bank. Transactions can be done at different locations. If you have a credit or debit card from a ‘scheme’ (e.g. Maestro or Visa/MasterCard) that is supported by the merchant, then the transaction device transfers money from the issuer (the customer’s bank account) and transfers it to the acquirer (the merchant’s bank account). A closed system uses stored value cards, keyfobs or tokens together with unique hardware and software to process non-cash transactions. Closed systems are often found on college campuses, in corporate cafeterias, or at petrol stations.

Advantages of cashless payment are often mentioned to be transaction speed, convenience, reduced maintenance needs, improved marketing intelligence, and increase in sales and revenues.

Table 2 shows the amount of cards in public possession, measured per country in 2007. The table is sorted by card amount, showing a clear group of countries standing out as cardholders. However, this provides no evidence that the cards are in fact used.

<table>
<thead>
<tr>
<th>Total number of cards in 2007</th>
<th>United Kingdom</th>
<th>Austria</th>
<th>9.717.088</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>118.962.715</td>
<td></td>
<td>9.047.607</td>
</tr>
<tr>
<td>France</td>
<td>99.512.454</td>
<td>Hungary</td>
<td>8.560.401</td>
</tr>
<tr>
<td>Spain</td>
<td>77.991.397</td>
<td>Ireland</td>
<td>7.470.883</td>
</tr>
<tr>
<td>Italy</td>
<td>74.781.000</td>
<td>Bulgaria</td>
<td>7.237.847</td>
</tr>
<tr>
<td>Netherlands</td>
<td>31.355.803</td>
<td>Finland</td>
<td>6.429.781</td>
</tr>
<tr>
<td>Poland</td>
<td>26.496.160</td>
<td>Slovakia</td>
<td>4.751.885</td>
</tr>
<tr>
<td>Portugal</td>
<td>18.178.388</td>
<td>Lithuania</td>
<td>3.857.095</td>
</tr>
<tr>
<td>Belgium</td>
<td>17.491.691</td>
<td>Slovenia</td>
<td>3.247.381</td>
</tr>
<tr>
<td>Greece</td>
<td>15.870.968</td>
<td>Latvia</td>
<td>2.370.246</td>
</tr>
<tr>
<td>Sweden</td>
<td>15.128.000</td>
<td>Estonia</td>
<td>1.772.446</td>
</tr>
<tr>
<td>Romania</td>
<td>11.708.948</td>
<td>Cyprus</td>
<td>1.056.728</td>
</tr>
</tbody>
</table>

Table 2 (www.ecb.int)

Table 3 shows the number of transactions made per capita, distinguishing debit and credit transactions. The countries are sorted by the total amount of transactions per capita.

This gives a better feel of card use, and proves that countries with a large amount of cards in circulation (see Table 2), use their cards less frequently than other countries. These countries are Germany and Greece, and in smaller regard also Poland and Italy. Van Woezik mentioned Poland and Italy as examples of countries where workers are still paid in cash. Other notable data, however, shows that Greeks, Cypriots, and Italians may only
use their cards scarcely, but make very large average transactions when they do so. In Germany this is not the case, and in Poland the opposite is true: their average transaction amounts are relatively low. Also sticking out, Finland makes a large number of transactions in relation to the amount of cards in circulation. Data from Denmark regarding the amount of cards is absent, but it is safe to say that Scandinavia use their cards relatively often.

Other observations from Table 3 are that the Netherlands, as might have been predicted, is a debit-oriented country. This is of course due to their PIN-brand, which has a negative effect on the amount of credit card use. Other debit-oriented countries are Slovenia, Lithuania, the Czech Republic and Scandinavia. On the other hand, the group of relatively credit-oriented countries consists of Greece, Spain, Cyprus, and Italy.

### Number of card transactions per capita in 2007

<table>
<thead>
<tr>
<th>Country</th>
<th>Debit</th>
<th>Credit</th>
<th>Total</th>
<th>Country</th>
<th>Debit</th>
<th>Credit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>156</td>
<td>17</td>
<td>173</td>
<td>Cyprus</td>
<td>15</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>Denmark</td>
<td>146</td>
<td>15</td>
<td>160</td>
<td>Slovenia</td>
<td>30</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>Sweden</td>
<td>125</td>
<td>13</td>
<td>138</td>
<td>Italy</td>
<td>14</td>
<td>16*</td>
<td>30</td>
</tr>
<tr>
<td>Utd. Kingdom</td>
<td>84</td>
<td>32</td>
<td>116</td>
<td>Lithuania</td>
<td>27</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Portugal</td>
<td>76</td>
<td>36</td>
<td>111</td>
<td>Germany</td>
<td>21</td>
<td>5*</td>
<td>26</td>
</tr>
<tr>
<td>Netherlands</td>
<td>98</td>
<td>7*</td>
<td>105</td>
<td>Slovakia</td>
<td>18</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>Estonia</td>
<td>88</td>
<td>10</td>
<td>97</td>
<td>Hungary</td>
<td>11</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Belgium</td>
<td>72</td>
<td>9</td>
<td>81</td>
<td>Czech Rep.</td>
<td>12</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Ireland</td>
<td>35</td>
<td>25</td>
<td>60</td>
<td>Poland</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Spain</td>
<td>19</td>
<td>23</td>
<td>42</td>
<td>Greece</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Austria</td>
<td>30</td>
<td>4</td>
<td>34</td>
<td>Romania</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Latvia</td>
<td>29</td>
<td>4</td>
<td>33</td>
<td>Bulgaria</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

*Table 3 (www.ecb.int)*

Table 4 shows the amount of electronic fund transfer terminals per capita in 2007, as well as its relative change to the year 2000. EFTPOS terminals are used to process cashless payment and therefore serve as a good indicator of cashless payment activities.

### Amount of EFTPOS terminals per capita in 2007

<table>
<thead>
<tr>
<th>Country</th>
<th>Term./capita</th>
<th>Rel. to 2000</th>
<th>Country</th>
<th>Term./capita</th>
<th>Rel. to 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>0,0301</td>
<td>151%</td>
<td>Denmark</td>
<td>0,0153</td>
<td>93%*</td>
</tr>
<tr>
<td>Finland</td>
<td>0,0255</td>
<td>197%</td>
<td>Austria</td>
<td>0,0126</td>
<td>251%</td>
</tr>
<tr>
<td>Cyprus</td>
<td>0,0245</td>
<td>221%</td>
<td>Belgium</td>
<td>0,0115</td>
<td>101%</td>
</tr>
<tr>
<td>Greece</td>
<td>0,0214</td>
<td>263%</td>
<td>Latvia</td>
<td>0,0089</td>
<td>487%</td>
</tr>
<tr>
<td>Italy</td>
<td>0,0206</td>
<td>196%</td>
<td>Lithuania</td>
<td>0,0082</td>
<td>470%</td>
</tr>
<tr>
<td>France</td>
<td>0,0195</td>
<td>unknown</td>
<td>Germany</td>
<td>0,0069</td>
<td>96%</td>
</tr>
<tr>
<td>Sweden</td>
<td>0,0192</td>
<td>196%</td>
<td>Bulgaria</td>
<td>0,0063</td>
<td>2533%*</td>
</tr>
<tr>
<td>Portugal</td>
<td>0,0191</td>
<td>214%</td>
<td>Czech Republic</td>
<td>0,0057</td>
<td>447%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0,0167</td>
<td>171%</td>
<td>Hungary</td>
<td>0,0053</td>
<td>181%</td>
</tr>
<tr>
<td>Estonia</td>
<td>0,0164</td>
<td>550%</td>
<td>Slovakia</td>
<td>0,0048</td>
<td>410%</td>
</tr>
<tr>
<td>Ireland</td>
<td>0,0164</td>
<td>unknown</td>
<td>Poland</td>
<td>0,0045</td>
<td>385%</td>
</tr>
<tr>
<td>Slovenia</td>
<td>0,0157</td>
<td>144%</td>
<td>Romania</td>
<td>0,0027</td>
<td>7686%</td>
</tr>
</tbody>
</table>

*Table 4 (www.ecb.int)*

There is an evident growth in the adoption of EFTPOS terminals between 2007 and 2000, with pronounced growth figures coming from the more developing countries like Romania and Bulgaria. In Germany, Denmark, and Belgium there appears to be stagnation in the adoption. These countries also represent the group of
developed countries with a low amount of terminals per capita. However, in comparing the amount of transactions to the number of terminals, Scandinavia, Belgium and the Netherlands show a high density. Germany does not stick out, which shows that there is little card use or growth in card use in Germany. As Froschermeier stated, the average German banking client is conservative. On the other hand, notable countries with low density of terminal activity are Greece, Cyprus, Spain and Italy. This seems due to their status as credit-oriented country.

Interesting results can be found in Figure 2. First, the number of European transactions per capita is considered, and the annual average is shown over a time scale. It can be concluded that the number of transactions is growing steadily, with an average European debit growth of more than twice the amount. To be exact, debit use grows 133% and credit 94%.

Second, the amount of European transactions per capita is considered, and the annual average is shown over a time scale as well. Here, the average debit transaction amount seems to fluctuate somewhat with a low point in the middle. Although the data is too limited to discern a clear trend, it can be said that no explicit growth or decline is evident. In the case of average credit transaction amount, however, a clear decline is evident (-16%).

*Figure 2 (www.ecb.int)*

Taken together, the remarks made on Figure 2 lead to two conclusions. First, debit card use is growing at a fast and steady pace. Second, credit card use is also growing steadily, but the average transaction amounts are declining. This points to the obvious trend that attaining a credit card, for instance for internet use, is becoming easier. This is not only the case for Denmark or Sweden; less developed countries are also rapidly joining into the credit card user base. If the European adoption of the credit card continues to grow as it does,
it will eventually lead an new concept of credit card use, outdating Fillistorf’s remark that credit card use is aimed at transaction amounts of 100 Euros and up, and debit is for transaction amounts below 100 Euros. If this trend is to continue, the future will show both cards being used for relatively the same average amount. Credit cards will cease to carry the reputation of large payment settlers, making them more attractive for smaller payments as well, and thereby broadening their user base.

4.2.1 - Credit cards

Credit cards work by offering consumers a line of credit for purchases made. Payment is done afterwards and a fee is charged for either the credited amount, or the maximum credit, or both.

Currently, Europe makes use of three large credit card schemes: Visa, MasterCard, and Europay. Together, these companies developed a global framework for chip card and payment terminal manufacturers. The EMV chip is globally introduced as the replacement of the magnetic strip. As such, all new payment terminals must be EMV compliant to accept current credit and debit cards.

British travel card brand Oyster, used both for public transport and as a credit card, was hacked by the Dutch Radboud University in June 2008. However, as Rabobank’s Peter Van Woezik says, although this fact received broad media attention, no harm was done to the consumer’s perception of card security.

Credit cards are used widely in the United Kingdom and Turkey with an average of 32 transactions per capita in the United Kingdom in 2007. Spain, Italy, and Portugal follow closely behind. The average European credit transaction amount is currently in a downward trend; for 2007 is was 68 euros. This means that, although credit cards are meant for larger size payments, their popularity in small payment use is increasing.

4.2.2 - Debit cards

The debit card is a card that directly debits a user’s account when used. Currently, the European debit card landscape consists of approximately 11 domestic schemes. As Accenture points out in their 2006 report, “domestic debit card schemes are predicted to decline to 4 (…). Of these, the major survivor is expected to be Germany’s EC-Cash, but few respondents feel confident enough to predict which other schemes will remain independent. (Accenture, 2006, p. 18) This declining amount of domestic debit cards is greatly due to the broad adoption of the EMV scheme, which promotes MasterCard’s Maestro brand and Visa’s V-Pay brand as the new European debit schemes. According to Günther Froschermeier, Vice President of CCV EL-ME, the EC-Cash will be followed by the Girocard in Germany and Austria. Its eventual adoption by other European countries to compete with the two North American brands is questionable, and heavily dependent on bank policies and politics.

In the Netherlands, the current ‘PIN-pas’, which has withstood the Maestro and V-Pay brands for years, will soon also make way. As Van Woezik says: “No Dutch specials anymore; it’s all about volume, and PIN is too small.”

4.2.3 - E-purse

An electronic purse, or E-purse, is used to indicate a stored money function on a card. Its use is mainly for low value payments, making it suitable for vending.

Currently, E-purses required users to load money onto the card in order to be able to spend it. This effort was often felt to be too large, resulting in people not using their E-purses. Other plaguing issues are the seemingly quick depletion of the card leaving users wondering where they spent it all, and the fear of losing the card
along with its credit. As a result of these disadvantages, the current national E-purse brands are being phased out in favour of new micropayment applications on debit and credit cards.

With the new micropayment chips, these issues have been solved for the customer. Now, for every online transaction the micropayment is reloaded to its maximum. This means that the user can continue using micropayment until the maximum is depleted. Making an online transaction (for instance paying with credit card in a retail setting or using an ATM) to confirm authentication, replenishes the maximum amount on the micropayment chip again. If the user does this on a regular basis anyway, he will not often be confronted with a depleted micropayment function. This “rolling limit” is defined by the issuing party and will most likely be a standardized amount per country ranging from twenty to a hundred Euros.

4.2.4 - Closed systems

Closed systems are an attractive payment option for companies who wish to increase customer loyalty. By offering a card that is unique to a certain type of system, for instance a certain brand of petrol station or supermarket, customers will return to earn more points or cash them in for benefits. “Some restaurants have experimented with smart cards that settle purchases and simultaneously earn customer loyalty points for each dollar spent. Once the cardholder earns enough loyalty points, a reward is provided.” (Kasavana, 2004) Cards or keyfobs can be used as debit cards with a certain stored value, like prepaid cards, and be discarded after use. Also, they can be more sophisticated and offer the user the possibility of reloading its value at specific terminals or through account transfer.

Closed systems are gaining market share as the adoption of a system, usually within an office building or college campus, are associated with relatively large investments. The market share in Europe is unknown for now, but according to Jaski’s Marco Brouwer, The Netherlands count a growing share of 20%.

Of course it is also possible for operators to use both open and closed systems simultaneously. For instance, a firm may accept debit cards, but also offer discount through a corporate smart card.

4.3 - CONTACTLESS PAYMENT

Contactless payment is based on the idea of simply waving or tapping a card or mobile phone in front of a reader to make a transaction. Because the focus here is placed on the contactless aspect, the type of contactless payment device, be it a card or other, can often be disregarded. Moreover, the reader remains the same regardless of the type of contactless medium. Therefore the focus is first on contactless payment in general.

The use of NFC (Near Field Communication) technology for payment has already proven “higher transaction throughput, increased speed per transaction, and enhanced customer convenience”. (Kasavana, 2008) Over the past years, it has become more secure and intuitive. The fact that payment media only work when placed within a few centimeters from a reader gives the consumer a greater sense of control. “With a contactless transaction, processing time is reduced and security enhanced since the payment media never leaves the sight or possession of the account holder. A contactless reader is designed with a series of small lights that blink, and may also emit an audible beep while processing a transaction. This feature is often used to promote the technology.” (Kasavana, 2006)

Already, contactless payment methods are emerging and spreading out. ABI Research (2008) measured a growth of contactless payment use of fifteen percent in 2007, with an estimated market value of more than $200 million. By 2013, ABI expects the market to be worth $820 million. Also in 2007, USA Technologies and MasterCard joined forces to equip 7.500 Coca Cola VMs with contactless payment technology: “The terminals
allow vending machines customers to use traditional magstripe credit cards or MasterCard’s PayPass contactless payment technology. MasterCard says launch of USA Technologies’ G-6 e-Port payment terminals is the broadest single deployment of cashless vending machines to date and doubles the number of terminals installed in Coca-Cola vending machines in the US.” (Mobile Payments World, 2007, Vol. Q4, p.23) Juniper Research claims that contactless NFC will account for half of the global payment market in 2013. “The mobile payments market, currently dominated by purchases of digital goods such as ringtones, music and games, is expected to be led by mobile money transfers and NFC for purchases in the future. This will boost the overall m-payments market by a factor of ten until 2013. Additionally, mobile wallets will incorporate NFC, enabling people to use their mobile phones to pay for small-value items such as refreshments and magazines. The top three regions for this sector are expected to be the Far East and China, Western Europe and North America, which together are estimated to account for over 70 percent of mobile money payments on a gross transaction basis by 2013.” (Mobile Payments Update, 2008, Week 44, p. 6)

4.3.1 - Contactless cards

Vending is identified by the contactless card associations to be an important market channel that will assist the industry in moving consumers from cash to cashless transactions. These two industries will mutually benefit each other and payment companies have according identified vending as a potential market. (Kasavana, 2006) Vending is expected to adapt to the shift from cash to cashless by including contactless payment methods in both open and closed configurations in addition to cash payment. (Kasavana, 2007)

The adoption of contactless cards will be stimulated by a reduction of credit card interchange rates and transaction fees by electronic payment providers. “It is no coincidence that these new rates and fees, focused on generating significant increased volume in small dollar transactions, are being introduced at the same time as contactless credit and debit cards.” Research firm Ipsos-Insight showed that 37 million Americans are willing to use a credit or debit card for transactions of $5 or less, while nearly 6.5 million Americans reported they would be comfortable using noncash payments for transactions of less than $1. (Kasavana, 2006) It all looks very promising for micropayments, which TowerGroup defined as “every day cash and check sales less than $5.00”. In their report, they found the 2007 micropayment market to represent $1.7 trillion and 400 billion transactions annually. They also found that of these amounts, 7% is tied to vending. Similarly, 40% goes to convenience, 30% incidental cash, 12% fast food, 5% transportation, 4% online video, ringtones and music, and 2% parking. (TowerGroup, 2007) As TowerGroup and Kasavana show, micropayment is becoming increasingly important for vending and contactless together.

The two major credit card brands, MasterCard and Visa, are also the two biggest suppliers of contactless payment media. At MasterCard, they projected a contactless adoption of 1,000 merchant locations and 2 million cards for the year 2005; however by year-end, more than 19,700 merchant locations deployed 120,000 contactless readers accepting nearly 10 million contactless cards and key chain fobs. During its pilot testing phase, MasterCard discovered a 28 percent increase in transaction amount among its cardholders compared to the previous year when contactless technology was not available. After this pilot, MasterCard stated: “the convenience of contactless technology, coupled with reduced interchange fees, helps construct a compelling business case.” (Kasavana, 2006)

4.3.2 - M-payment

The different interpretations of m-payment must first be addressed; as there are different ways to perceive m-payment and both have very different implications for CCV’s business interest.

In its broad sense, m-payment is considered payment by mobile phone. However, this can be divided into different methods. First, m-payment can be done by text messaging. For instance, a consumer may pay for a
candy bar by text messaging a certain number provided by the VM. Payment is then deducted from a telephone bill. This is currently the largest application of m-payment, used in vending and parking. However, there are a number of inherent problems inhibiting future success. For one, the telephone companies will find that they will have to bill their customers increasing amounts of money. For the customers, their perception will quickly be that it is the mobile network operators who are so expensive. Also, mobile network operators are not equipped to deal with large transaction amounts. It can then be said that this method of payment is limited to small value payments, therefore not reaching the full potential of the mobile phone. Another problem is the time factor; if a candy bar drops out of a VM, who is to say if it is yours or paid for by the quickly texting consumer behind you? As texting a number takes a small but substantial amount of time, younger people, for instance, will be quicker in completing a transaction. This may be seen as a slight inconvenience, but it can lead to unpleasant situations and, in the end, it compromises the security of this payment method.

In the end, for CCV, there is no way it can capitalize on telephone transactions and, therefore, this paper disregards text message payment as an option. As Fillistorf commented, payment by text message is simply not a business opportunity. Accordingly, all other references to m-payment will pertain to the following second type of payment.

The second type of payment considered m-payment, and the one this paper addresses, sees the mobile phone as an NFC-enabled payment device. As the reader for all NFC devices are the same, m-payment is very similar to contactless cards. As Beck sees it, given that both the card and the telephone are merely carriers of the contactless chip, m-payment is just another available contactless payment media.

There is no doubt that m-payment represents an up and coming segment of contactless payment. “From the perspective of the consumer, the mobile phone has achieved ‘permanent share of pocket’, i.e. next to the wallet and keys it is the object that is most likely to be constantly with the consumer.” (Achterberg & Bekx, 2008) Brouwer points out that, at companies, schools and universities, more people carry a mobile phone than a credit card. Visa recently conducted an online survey showing that 61 percent of its respondents were positive to m-payment, and 64 percent expressed interest in telephone-based loyalty coupons. “The development and deployment of innovative chipsets for cellular phones is projected by ABI Research to lead to widespread adoption of NFC contactless payments over the next five years.” (Kasavana, 2008) MasterCard claims it has transformed mobile phones into secure contactless-payment devices and is running 17 mobile pilots across all major North American regions. (Hahn, 2008) In Poland, Polkomtel has introduced m-payment together with mPay and they expect to attract over 10 million users in the next five years. According to mPay: “Initially, we intend to target the category of payments that are perceived to be a nuisance to consumers; for those payments the use of cards is limited and cash is inconvenient. Payments in vending machines, for parking services, digital content on the web or for a newspaper at a news stand are certainly a perfect fit for our service.” (Mobile Payments World, 2007, Vol. Q4, p.18)

The large-scale rollout of m-payment seems slower than stakeholders have expected. For instance, the prediction of how many phones shipped in 2011 would be equipped with NFC technology would be 50% according to Fitzgerald (forecast in August 2006), 30% according to ABI Research (forecast in September 2006), 20% according to the same ABI Research (forecast in December 2006) and 12% according to Juniper (forecast in 2007). Similarly, global market forecasts in 2002 predicted that in 2006 the amount processed through m-payment would be € 55 billion. However, in 2006 the same sources readjusted their prediction to € 10 billion by 2010. Currently, the market size is reported at € 2.2 billion, a mere 4% of their initial prediction. (Mobile Payments Update, 2008, Week 45, p. 5)

There is also a three-way struggle for power with credit card companies on the one hand, driving contactless payment. Mobile network operators are attempting to get ahead with their control of loyalty coupons and text
message payment, but they seem to find it difficult to tread on the bank’s domain. The banks are the third
players in the game, regulating the market in order to keep the telephone companies out of play.
(Ghahremani, 2008) It seems that for m-payment to become a serious alternative to contactless cards, a clear
business model for mobile payments must first emerge.

4.4 - ANSWERING THE RESEARCH QUESTION

The first research question: “What are the most important new payment methods in terms of prospective
customers?” can now be answered.

Adoption statistics show that, although certain countries show a clear preference for either the credit- or debit
card over the other, both cards show a trend of increasing adoption and use. Their growth figures show a
steady rate of technological substitution, where plastic gradually substitutes cash. In the case of less
developed countries the growth is more explosive, signaling a growth more in line with the bandwagon effect,
where imitation leads to the adoption rate ‘taking off’. Both are therefore taken into account. As this paper
considers the European market, the debit card of choice is naturally the European debit card. This card is
represented by the Maestro and V-Pay brands. For the credit card, this paper will also consider the new
standard: EMV, offering a chip as an alternative or in addition to the magnetic strip.

Closed systems are disregarded as CCV has no experience in this area. More importantly, a software package is
often part of a closed loop market offering. Developing such a software package would need considerable
investments, and in order to analyze this as a correct course of action for this development more research
must be done.

Secondary data used for chapter four often names contactless the payment method of the future. Both
contactless cards and m-payment are extensively hyped, and both have a large investment backing.
Contactless credit cards are currently in the process of early adoption, with a large amount of cards equipped
with the micropayment solution mentioned in paragraph 4.2.3, E-purse. M-payment is currently at the end of
its pilot phase and many predict it to be adopted within a number of years.

In summary, the following new payment methods seem most promising in terms of prospective customers and
will be considered in the remaining part of this paper.

- European debit card: Maestro and, similarly, the V-Pay brand;
- EMV credit card: the EMV compliant credit card, with or without magnetic swipe strip;
- Contactless debit/credit card: an EMV compliant debit or credit card with contactless NFC technology;
- M-payment: payment by mobile phone using NFC technology.
5 - PAYMENT METHOD CHOICE

This chapter serves to answer the second research question: “What offering is most promising for the vending market?” and does so by a field value assessment. This is then presented according to the innovation, community, and population qualifiers presented in paragraph 2.3.2, Process of technology change: diffusion. Input from respondents and desk research are used to discuss the individual qualifier scores from the field value assessment. Together, this provides a sufficient amount of data to answer the research question, which is done at the end of this chapter.

5.1 - FIELD VALUE ASSESSMENT

To best assess what offering provides superior customer value a field value assessment is held among a group of field experts. Tables 5, 6, 7, and 8 give the numerical representation of the outcome of that survey. The categories on top originate from research question one, “What are the most important new payment methods in terms of prospective customers?”, and the questions originate from the theoretical framework (see Table 1). Higher scores can be interpreted as better and colors are assigned to make the results easier to read: red (< 0), yellow (0 ≤ 1), and green (≥ 1). Summing up the scores gives the same rank as counting the ‘green’ results.

5.1.1 - Innovation qualifiers

Regarding ease-of-use, relative user advantage, compatibility, trialability, and observability should give a good indication of the payment method’s internal success potential.

**Ease-of-use**

The European debit card mainly suffers from bad ease-of-use and relative advantage scores. Respondents all agreed that the requirement for using a PIN-pad was not user friendly and took too much time.

As cards require either swiping or dipping them into a reader, a step to more user friendliness would be contactless. “Many system suppliers claim that the convenience of cashless payment options can increase the number of purchase transactions by an average of 15% while the average revenue per sale can increase by 20-30% over a same store cash transaction due to multiple purchases.” (Kasavana, 2004)

Fillistorf was more critical of m-payment’s ease-of-use: “The fact that the m-payment application must be downloaded and installed, together with a probable lack of a simple interface, hurts the ease of use. Also, because a phone’s life is 18 to 24 months, having to reinstall the payment application onto a new phone is not user friendly.” He underlines the importance of user friendliness: “In the future, phones might easily communicate among one another and transfer money to, for instance, settle a bar tab amongst friends. Cards don’t do this. In the end, convenience is most important.” Even so, both contactless methods score well on this point.
Relative user advantage
As with ease-of-use, the score of the European debit card is hampered by the required PIN-pad. Its relative user advantage is equal to that of the current cash payment, and in comparison to the other three alternatives it falls far behind.

The adoption of the EMV-chip is good news for vending, as the older magnetic strip is sensitive to fraud and high in maintenance. This calls for a chip reader into which the card is to be dipped, instead of the old swiping method. This method is largely used in vending, but is high in maintenance due to physical wear and dust accumulation. Together with high transaction costs, maintenance costs, and uncertainty surrounding the micropayment chip, the EMV credit card does not make a good business case for vending the ‘4C’s, as affirmed by Fillistorf.

Respondents also comment that the EMV credit card is expensive to implement in vending, as the interchange fee that the operator would have to pay is too high for the low value goods sold in most VMs. A credit card payment would then consume a too substantial portion of the profit. Some countries do offer credit card payment in VMs, mainly at international hubs, such as airports, train stations, and resorts. In these locations it is more attractive as many North American and Asian customers prefer paying with credit cards.

A second factor hampering VM credit card acceptance is the relatively high price merchants pay for its use. This, together with the financial assessment issuers often require from their customers, makes it difficult for some consumer groups, for instance teenagers or people with low incomes, to make use of the credit card. For the VM operator, this means choosing the offered payment method based on the user segments in a certain location.

Kasavana sums up a large number of benefits that contactless payment has for vending: it increases convenience due to many media formats; it allows for faster transactions reported to lead to average purchase increases of fifteen to twenty percent; in the case of micropayments, there is no PIN or signature necessary; the risk of fraud is reduced as media is not exposed to known vandalism acts like foreign coin substitution or skimming; the added cost of cashless to cash is minimal; the life of the media is extended because there is no mechanical contact; it never leaves consumer’s control; it offers possibilities for loyalty programming; it is easily applied to e-purse, credit, debit and loyalty programs; and finally, it has the competitive advantage in terms of increased speed and sales satisfaction. According to American Express, contactless payments average a 53 percent speed increase to credit cards and 63 percent to cash. Thus, “contactless technology can contribute to enhancing consumers’ perception of vending.” (Kasavana, 2006)

However, there are some difficulties surrounding the adoption of contactless. “MasterCard will charge a small setup fee and then a fee for each provisioning of card data over the air. Fees are confidential between MasterCard and its issuers. Nonetheless, issuers will undoubtedly try to pass (part of) these costs on to consumers, and it is not at all certain that consumers are willing to do so.” (Mobile Payments Update, 2008, Week 45, p. 2) It can be stated that if the costs rise substantially, this will shrink user advantage. Nonetheless, most respondents spoke out their expectations that prices would only rise marginally, if at all.

Fillistorf loves the micropayment approach of Visa and Mastercard, applauding it for being “far better” than current e-wallets such as the Swedish ‘Cash Card’, based on the Belgian ‘Proton’, who’s reloading effort makes using it unnatural. “Cardholder effort is the key”. As explained in paragraph 4.2.3, E-purse, the issuing party defines its rolling limit and micropayment is reloaded to its maximum with every online transaction. Beck sees micropayment as the crucial factor for the adoption of contactless.

Overall contactless proves to provide the highest relative user advantage, with m-payment coming in second
due to the uncertainty surrounding mainly the user interface.

**Compatibility**
The European debit card scores the lowest on compatibility, as it requires online payment validation, which in turn requires a PIN-pad. Though this is often not a problem, as VMs already use a PIN-pad for product selection, in all other cases, adding an electronic reader to a VM in addition to cash modules is seen as very expensive. An additional PIN-pad is not a welcome investment and is therefore not considered to produce a successful business case in combination with the usual low value VM products. Moreover, this would require an extra space freed in the VM for a PIN-pad, leading to extra costs and a possible conflict of VM front panel real estate.

The other three options are moderately compatible with almost equal scores ranging from 0,4 to 0,6. This can be attributed to the fact that a credit transaction must be an online transaction, either at the moment of payment or shortly thereafter. This requires the VM to be equipped with a UMTS or GPRS over-the-air connection which validates a payment either instantly or at a later time. With the second option, credit transactions can be validated as a batch at set intervals of the day, thereby benefiting server efficiency.

**Trialability**
Trialability is positive for all alternatives except m-payment; this would be due to the limited phones equipped with NFC technology and their price, making trials rather expensive to do. Even so, m-payment is currently in ending its trialing phase, with overall positive results.

The European debit card shows relatively low scores everywhere except for trialability, which is high as it is already adopted on a large scale, just as the EMV credit card. It also seems that the absence of a large number of contactless readers has not had a severe negative influence on the contactless card. Perhaps the respondents expected trials to be done only at certain points where this is available.

**Observability**
The observability scores follow from the direct visibility of innovation results to others. As the contactless payment methods are widely covered in publications and trade magazines, they score better than the normal cashless methods. As the European debit card and the EMV credit card are already fully developed, this stage is not observable anymore. Also, non-disclosure agreements are the norm in the payment sector according to Van Woezik. The banks are however expected to communicate their plans to VM stakeholders. As Van Woezik recalls, banks intensively communicated their plans during the introduction of the ChipKnip, and they are expected to do so again.

5.1.2 - **Community qualifiers**

**Low prior technology drag**
As there is already a large infrastructure built around the European debit card and the EMV credit card, these two methods score well on low prior technology drag. Stated differently, as these methods differ only slightly from the current norm, it is not necessary to make large changes to the payment process.

For contactless, the largest change to be made is to ensure the adoption of contactless readers by merchants and VMs. As the current readers are adopted on a large scale, technology facilitators must either wait for these to be written off and replaced by contactless readers, or provide an incentive to make replacement happen. Therefore the contactless scores fall behind.
The current inconvenient state of m-payment innovation seems to hamper the current adoption; certainly when the average consumer is already flush with credit and debit cards, and, as stated above, merchants are heavily invested in the POS (Point Of Sale, a location where transactions occur) infrastructure that goes with them. (Ghahremani, 2008)

The bottleneck regarding the adoption of m-payment is not with the users, who have proven to understand and appreciate it. Rather, the problems are the lack of NFC-enabled phones and the lack of a Trusted Service Manager (TSM). As most consumers already have a mobile phone without NFC, they will not switch to a new phone directly. Steegstra believes “major brands will equip their popular phones with NFC technology eventually. This development has been a little slower than expected, but it will happen in the end.” (Mobile Payments Update, 2008, Week 45, p. 1)

Luckily for m-payment, there are many opportunities that help its adoption along. For instance, 1 million people in America used mobile banking at the end of 2007. Currently, that number exceeds 5 million, and it is expected to reach 42 million by 2012. (TowerGroup, 2007) This trend shows cell-phone finance increasing in popularity; “Bank of America would like to embrace mobile payments but says that there are technical challenges in getting a payment application downloaded and working securely on the vast array of mobile devices offered by U.S. cell-phone carriers.” Doug Brown of Bank of America finds inspiration in Apple’s iPhone store, “although it doesn’t carry a payment application, those are the types of developments we look for to change customer behaviour and expectations.” (Ghahremani, 2008)

**Low investment risk**

The enormous investments made in both contactless technologies make a strong case for their developers and facilitators to go through with distributing them among consumers in a technology-push strategy. This is also reflected in their sponsorship and expectations scores.

Contactless technology still needs investments to promote adoption, mainly promote card adoption and to replace current readers with contactless alternatives. Because of this, the scores of contactless point to a higher investment risk than those of the European debit card and the EMV credit card.

Overall, investments are extremely large for any new payment method. For instance, large banks estimate their cost for migrating to SEPA to be in range of € 50 to € 70 million, and many banks fear collateral damage from SEPA in the form of reduced interchange revenues. Even so, banks take these risks for granted as they expect to gain access to an increased supply of competitive payment processors, enabling them to earn back part of their investments. (Accenture, 2006, p. 36) And, in the long run, efficiency will lead to a reduction of incremental costs.

**High level of sponsorship**

The field value assessment shows a high level of sponsorship for contactless, and moderate for debit and credit card. The results are roughly the opposite to those of low investment risk, which is expected as investments with a high amount of risk are only tackled with the commitment of high sponsorship. Therefore,
contactless both have a high investment risk and high sponsorship. In order to provide an encompassing view of the level of sponsorship, a stakeholder analysis is done. Taken from paragraph 2.3.1, *Process of technology change: innovation*, the technology developers, technology facilitators, regulatory agents, customers, and other stakeholders are discussed below.

**Technology developers**
As technology developers, Visa and MasterCard are two extremely large players in the card market. They strive for large-scale adoption of their debit and credit products. Currently, their focus is mainly on their newest product flagships: the contactless credit cards V-Pay and PayPass. They are accordingly applying pressure on banks to issue these to their customers. Banks, however, are afraid to push a product that consumers cannot widely use, as contactless readers are not largely adopted by retailers yet.

In the case of m-payment, technology developers are also mobile phone manufacturers like Nokia and Siemens. Their interest is to simply seek a new technology to equip their phones with, thus boosting sales. Therefore these companies are very driven to help m-payment succeed, as this would mean a substantial increase in both sales to new customers, as well as the renewal of existing non-NFC devices currently in the market. M-payment also holds a large promise for technology vendors and systems integrators. “These organisations are positioning themselves to provide the infrastructure and messaging for mobile payments and in the process offering to act as a trusted intermediary between the banks and the mobile network operators.” (Achterberg & Bekx, 2008)

**Technology facilitators**
As technology facilitators, banks have to deal with the two-sided aspect of the payment market. This means that in setting the prices for payment instruments, banks need to tend to both consumers and retailers. “The fact that benefits and costs arise jointly on the two sides of the market effectively means that there is no direct economic relation between price and cost on either side of the market. Any change in demand or cost on either side of the market will affect both the total pricing level and pricing structure. Hence, it is generally not possible to examine price effects on one side of a market in isolation, i.e. without considering the resulting feedback effects from the other side. That is why prices in two-sided markets are generally never fully cost based, but also depend on demand elasticities and indirect network effects.” (Bolt, 2006, p. 370) Bank are therefore posed with a classic ‘chicken and egg’-problem in the form of retailers who hesitate to adopt contactless on one side, and consumers to whom it is risky and costly for them to push contactless on the other.

M-payment is an attractive new innovation for banks, as they may greatly reduce the use of cash and its associated costs. Also, in offering m-payment, banks enlarge their service portfolio offered to retailers. For telephone companies, m-payment holds a possible promise of return on their large infrastructure investments through both extra payment related revenues and associated increases in air time and data use. (Achterberg & Bekx, 2008)

**Regulatory agents**
Currently acting as the most prominently active regulatory agent, SEPA, short for Single Euro Payment Area, is an initiative aimed at creating a single form of electronic payment across and within European borders. This means that consumers will be able to receive and make payments anywhere under the same conditions, obligations, and regulations as in their home town. To do this, the SEPA Cards Framework (SCF) is gradually being introduced in the European Union, as well as Switzerland, Iceland, Norway, and Liechtenstein. Its stakeholders are the European Central Bank, the European Commission, and the European Payment Council. The ECB recognises that ICS brands have the potential to significantly increase merchant service charges in the
low/no interchange nations of Belgium, Netherlands and Finland and thus raise merchant and consumer concerns. (Jones, 2007, p. 5)

Customers
In 2007, Jonker researched customer satisfaction for the use of four payment instruments: cash, the debit card, credit card, and the e-purse. He showed that payment cards are still growing in popularity, where the debit card is perceived as the safest, fastest and most user-friendly payment instrument. Cash is regarded as the cheapest. Respondents considered the credit card safe, fast and easy to use. However, 44.7% of the respondents were dissatisfied about the credit card’s cost. (Jonker, 2007, p. 291) Although Jonker did not take age into account, Kasavana sees it as an important factor: “the age group of 18-25 year olds, a group labelled Generation P is known for its preference for cashless (plastic) payments, it also has grown up with a cellular phone in one hand and an iPod in the other.” (Kasavana, 2008)

Addressing SEPA from a customer point of view, Accenture found large benefits to retailers, being mainly “improved account reach, single file submissions, common terminals and common domestic processes.” They also comment that lower processing costs resulting from savings in merchant service charges, terminal costs, POS processes and infrastructure result in benefits for large retailers. Larger European companies are predicted to benefit from the substantially improved payments environment promised by SEPA, greatly streamlining both national and cross-border incoming and outgoing payments. (Accenture, 2006, p. 24)

M-payment is said to provide faster throughput at the checkout and the ability to send marketing messages to the consumer. Even so, contactless cards may be equally fast and marketing messages may be unwanted by many consumers. Regardless, m-payment will benefit retailers in the reduction of service costs. From the perspective of the consumer, the mobile phone is likely to be constantly around and consumers are increasingly comfortable with the mobile phone fulfilling new innovative functions. However, Achterberg and Bekx are sceptical that consumers are ready to abandon the wallet and rely primarily on the phone. As a device increasingly transforming from a phone into a lifestyle or leisure tool, the important task of handling payments may be a step too far. (Achterberg & Bekx, 2008)

Regardless of which electronic payment method will adopt the greatest market share, electronic payment will mean good news for the consumer: Van Woezik foresees the adoption of electronic payment methods to lead to lower interchange rates, albeit with a small delay.

Other stakeholders
As it is yet unclear whether the following role will be called into existence and by whom, the TSM is first handled below.

To take m-payment to a next level, the issue of the placement of the Secure Element (SE) must be addressed. The SE is a chip that holds identification information and encryption keys, effectually identifying the user and playing an important role in authorizing payment. It can be built into the phone itself, the SIM card, or an additional memory card, but this problem is larger than of just a practical nature. Indeed, each of these placement options benefits another party and this problem has therefore grown out to a three-way power struggle. Placing it in the phone serves telephone manufacturers if they were interested in expanding their business in that way. Placing it in the SIM serves the mobile network operators and makes them in charge of governing the technology. This may have the effect of them gaining so much power that they would use their power to lock in customers and overcharge them. Other options, like placing the SE on a memory- or smart card, lacks a strong business case and may prove to be too much hassle for consumers.

All in all, the stakeholders fear a Nash equilibrium-like stand-off, which leaves them calling for TSM to integrate all of the applications, networks, and data flows. “The TSM would manage the SE, regardless of
where it has been placed on the device, allowing customers to avoid having to care or even know about the issue.” (Mobile Payments Update, 2008, Week 44, p. 2) This begs the question of which role the TSM should fulfil. This can be a more passive role as an intermediary who ensures a smooth flow of information, or more actively as a facilitator of its development and adoption and ensuring it all works well. The Rathenau institute regards the user’s perspective, stating that “a non-proprietary SE placement would be the best option. A lack of SE ‘ownership’ would ensure the fewest barriers to the initiation of NFC services. Few barriers to entry would also lead to a greater range of services offered, enhancing freedom of choice for consumers.” (Mobile Payments Update, 2008, Week 44, p. 3)

Vending operators and food and beverage companies are another group of stakeholders. Their interest lies in increasing their revenues through better products and promotion. For m-payment, this creates an opportunity as the mobile phone has the ability to receive and show coupons and loyalty programs on screen. Vending can play into this by placing promotional stickers, flyers or posters on or in the area of their machines, enabling the user real-time product discounts from downloaded coupons or added service in the form of, for instance, nutritional information. “In essence, the concept is to convert the cell phone into an electronic wallet that can be used for a variety of functions (as well as settlement) at the point of sale.” (Kasavana, 2008)

High expectations
Also related to the level of sponsorship, high expectations show almost the same result. The expectations surrounding the European debit card and EMV credit card are equal to zero, which means that the community does not expect these two payment methods to find adoption for VMs.

Contactless is truly a big market; as CCV Belgium’s Dimitri Beck points out, every current terminal can be adapted to contactless. This results in a market potential equal to the current install base together with new business. Beck also expects its future in vending to be big due to firstly the minimal changes needed for the vending infrastructure, secondly the possibility to use the current marketing (Visa/Mastercard), and third and fourth the usability and speed.

According to Van Woezik, every retail and non-retail terminal will eventually be equipped with a contactless reader. In the Netherlands, this adoption will “boom” in 2010 and 2011, whereas Europe as a whole will reach this point by 2015 and 2016. Currently, the only growth in the Belgian contactless market is found in non-payment, where public transport and the closed loop sectors lead the way (Beck, 2009). But Beck underlines his expectation that the non-payment market is the first adopting sector, and the rest will follow. The adoption of Jeronimo’s PayPass reader from Vivotech is slow, but he does not blame the economic crisis. The merchant simply refuses to pay more for a reader with a new and unproven payment method. Although Fillistorf finds it hard to make any predictions concerning adoption, he expects all debit and credit cards to be contactless within four years. He expects this to start with the credit card: “Issuing banks will start with contactless credit cards to push the use of credit cards themselves, as they get higher revenue from them opposed to debit cards.”

Van den Hazenkamp of VM producer Maas International comments that contactless cards are currently applied in VMs in Turkey and in parts of Asia, where Singapore uses the Octopus card and Hong Kong uses the Oyster card. This is combined with cash slots. Maas International expects cash to remain a payment method for vending in the near and not so near future, although they do state the impracticality of operating cash machines. According to Beck, contactless growth is necessary and will certainly happen. Within five years, the lifecycle of a card, he expects all cards to be replaced with cards that carry contactless technology. As Fillistorf predicts, the credit card is already adopted widely in Europe, and its adoption will grow because of the extra contactless function. Froschermeier sketches a path where some banks start issuing small amounts of contactless credit cards in 2009, and greatly enlarge their output in 2010 to match other European countries.
Debit, however, would stay behind due to the lack of initial cost offset possibilities for the banks.

5.1.3 - Population qualifiers

High level of communication
Expectations of the respondents are that the population only moderately communicates about new payment methods, with a slight advantage to m-payment due to the relatively large amount of media attention it receives. Credit cards seem invisible in the media but they do not need to be, according to Fillistorf. M-payment is novel and therefore it must be promoted by banks, telecom providers and the media.

Opinion leader backing
Van Woezik is careful in predicting the success of m-payment. In his view, “hip iPhone users” [early adopters] will take on a role of opinion leader, but the average banking client is seen as more conservative. Even so, the conservative choice in this case, the European debit card, has the lowest opinion leader backing. Fillistorf affirms that contactless cards will adopt easier than m-payment: “after reaching the tech freaks, m-payment will find it hard to reach the rest”. Beck sees all the media hype surrounding m-payment as a marketing tool, and is quick to comment that to date, many initiatives have failed. All in all, this results in a lower score for m-payment than for the EMV credit card and the contactless card.

Cultural norms
In Europe, not all countries are as innovative as North America is. In Germany, for instance, contactless is hardly trialled or rolled out. Froschermeier attributes this to the relatively un-innovative nature of German customers. However, early rollout is scheduled for 2009 and a contactless form of the e-purse is being implemented as a micropayment chip on some Girocards. This early application for micropayment gives more security and is therefore starting German adoption in ticketing.

Cultural implications that are not country-specific but payment method-specific are not mentioned by the respondents, apart from the idea that not every country has such a wide mobile phone adoption as, for instance, the United Kingdom. This would lead to a lack of trust in the safety of m-payment in these countries. The contactless card seems to be the most universal in cultural aspects; this is most likely due to the fact that both the contactless credit and debit cards are taken together, removing cultural preference for either of the two.

![Table 7](image)

<table>
<thead>
<tr>
<th>3.1. High level of communication</th>
<th>European debit card</th>
<th>EMV credit card</th>
<th>Contactless debit/credit card</th>
<th>M-power</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,6</td>
<td>0,6</td>
<td>0,6</td>
<td>0,8</td>
<td></td>
</tr>
</tbody>
</table>

| 3.2. Opinion leader backing      | 0,4                 | 1,2            | 1,4                           | 1       |

| 3.3. Cultural norms              | 0                   | 0,2            | 0,6                           | 0       |

Table 7
5.2 - ANSWERING THE RESEARCH QUESTION

The results of the field value assessment, aimed at answering the second research question: “What offering is most promising for the vending market?” are seen together in Table 8. As can be seen, it clearly favors contactless, where the contactless credit and debit cards score highest and m-payment followed in second. Both technologies are still in the early stage of adoption, with contactless credit cards in the early phase of technology substitution and m-payment in the trial phase. However, the enormous investments made in both technologies make a strong case of their developers and facilitators going through with distributing them among consumers in a technology-push strategy. Both technologies use the same type of reader (NFC). This strengthens the conclusion that the offering that provides superior customer value to the European vending market is an NFC reader.

The expectations are high for contactless to be adopted on a large scale, with the credit card as the first contactless product. Speculation surrounding contactless acquiring a significant market share differ from the year 2011 to 2016, but in this research no individual or organization has been encountered who would dispute contactless as a payment method widely adopted in the near future. M-payment projections are confident, but dates are not often given. Also, the role of the TSM to adequately steer the development and adoption is still nonexistent. A clear business model for m-payment has still to emerge, but when it does m-payment will become a serious alternative to contactless cards.

For vending, the micropayment chip available on contactless credit cards will be the key feature, allowing users to easily and swiftly make small value payments without having first charge the chip due to its rolling limit, and without having to input a code. Cardholder effort is the key, which is why vending operators are ready for contactless.

<table>
<thead>
<tr>
<th>1.1. Ease-of-use</th>
<th>European debit card</th>
<th>EMV credit card</th>
<th>Contactless debit/credit card</th>
<th>M-payment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0,8</td>
<td>1,6</td>
<td>1,4</td>
</tr>
<tr>
<td>1.2. Relative user advantage (compared to cash)</td>
<td>0,2</td>
<td>0,8</td>
<td>1,8</td>
<td>1</td>
</tr>
<tr>
<td>1.3. Relative user advantage (compared to all)</td>
<td>-0,4</td>
<td>0,5</td>
<td>1,4</td>
<td>1</td>
</tr>
<tr>
<td>1.4. Compatibility</td>
<td>0</td>
<td>0,4</td>
<td>0,4</td>
<td>0,6</td>
</tr>
<tr>
<td>1.5. Trialability</td>
<td>1</td>
<td>1,4</td>
<td>1</td>
<td>-0,2</td>
</tr>
<tr>
<td>1.6. Observability</td>
<td>-0,4</td>
<td>-0,2</td>
<td>0,6</td>
<td>0,6</td>
</tr>
<tr>
<td>2.1. Low prior technology drag</td>
<td>0,8</td>
<td>1</td>
<td>0,4</td>
<td>0,2</td>
</tr>
<tr>
<td>2.2. Low investment risk</td>
<td>0,4</td>
<td>0,4</td>
<td>-0,4</td>
<td>-0,4</td>
</tr>
<tr>
<td>2.3. High level of sponsorship</td>
<td>0,2</td>
<td>0,4</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2.4. High expectations</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1,4</td>
</tr>
<tr>
<td>3.1. High level of communication</td>
<td>0,6</td>
<td>0,6</td>
<td>0,6</td>
<td>0,8</td>
</tr>
<tr>
<td>3.2. Opinion leader backing</td>
<td>0,4</td>
<td>1,2</td>
<td>1,4</td>
<td>1</td>
</tr>
<tr>
<td>3.3. Cultural norms</td>
<td>0</td>
<td>0,2</td>
<td>0,6</td>
<td>0</td>
</tr>
<tr>
<td>Total sum</td>
<td>2,8</td>
<td>7,5</td>
<td>11,4</td>
<td>8,4</td>
</tr>
<tr>
<td># Scores ≥ 1</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 8
6 - MARKET ENTRY METHOD

In order to determine how to enter the market effectively, this paper considers the market segment, country, competitive strategy and pricing strategy. This is formulated in the third research question, “What market segment, country, competitive- and pricing strategy deliver superior customer value?” which is addressed in this chapter. As mentioned in the conclusion, the offering considered is the contactless reader.

6.1 - MARKET SEGMENT

Brouwer segments the vending market in education, companies and organizations, and public. He adds that it must also be taken into account that a large group of low income customers demand cash. Taking contactless into account, cash is omitted. Education is also not a good option as the adoption of credit cards among this group is relatively low. It must however be noted that this group has potential for m-payment use in the future. In the near future, then, the options left are companies and organizations, and public vending. As CCV has no experience in closed loop and does not have a software package to coordinate closed loop debit payments, the final formulation of the target market segment is open-loop payments in companies and organizations, and in the public segment.

6.2 - COUNTRY SELECTION

There is little information available on the amount of VMs in Europe. The information acquired is shown in Table 6.

<table>
<thead>
<tr>
<th>Machine parks in 2004</th>
<th>Total United States</th>
<th>6.000.000</th>
<th>Sweden</th>
<th>88.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Japan</td>
<td>4.900.000</td>
<td>Switzerland</td>
<td>81.500</td>
<td></td>
</tr>
<tr>
<td>Total EU</td>
<td>3.100.000</td>
<td>Austria</td>
<td>76.080</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>593.000</td>
<td>Portugal</td>
<td>50.650</td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>562.000</td>
<td>Hungary</td>
<td>33.000</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>477.000</td>
<td>Czech Republic</td>
<td>12.000</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>470.800</td>
<td>Slovakia</td>
<td>7.070</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>200.000</td>
<td>Poland</td>
<td>7.000</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 (www.worldwidevending.org)

First, it seems that Europe significantly lags behind the United States and Japan in VM adoption. Second, there are surprisingly large differences between certain countries in the amount of vending machines. For instance, France has almost 85 times more VMs than Poland. Although it may be too scarce to base any conclusions on, it appears that larger and more economically developed countries are home to a larger amount of VMs and the economically less developed countries still have a large adoption process to undertake. Also, there is little data available on the percentage of VMs with an online (GPRS) connection. It is said that all new machines have a connection to accommodate their new automatic telemetry systems. Therefore, most machines in for instance the Netherlands are equipped with an over the air connection. But a number of countries lag behind. As Froschermeier commented, most German machines are offline.

In choosing the countries to sell its market offering to, information presented in tables 2, 3, 4, and Figure 2 are used. Though it must be noted that statistics for France, Turkey, and Switzerland are missing and these countries are accordingly disregarded. As the banks aim at first rolling out contactless in combination with
credit cards, it is best to choose countries who favor the credit card already or who are rapidly adopting it. These countries are Greece, Spain, Cyprus, Italy, Ireland, Portugal, the United Kingdom and Estonia. If the condition is added that the average number of yearly transactions per capita must be ten or higher, Greece and Cyprus are omitted. Italy is also omitted as it is shown to favor cash payment, with a large number of cards but low usage statistics, and workers reputed to be paid in cash. This leaves the countries Spain, Ireland, Portugal, the United Kingdom and Estonia. The United Kingdom and Spain show a large number of VMs, where Portugal lags behind. In order to discern a trend, it would be interesting to find VM country amounts per year.

It must also be noted that large growth figures are found between 2001 and 2007 in credit card use in certain countries. Expressed as transaction value in millions of Euros, these countries are Slovakia (15 to 1086), Romania (2 to 626), Latvia (14 to 413) and Lithuania (21 to 463). Certainly if this growth continues, these countries represent large potential markets.

Regarding CCV’s own countries, the Netherlands is simply too PIN-oriented to use the credit card and Germany is shown to be a cash country without online VMs, so these countries prove to be unfit for contactless in the near future. When debit cards adopt contactless, the situation in the Netherlands will naturally have to be reassessed. As stated, Switzerland is disregarded due to missing statistics. Finally, Belgium does represent an opportunity for cashless credit, as Belgium is less debit-oriented than the Netherlands. However, credit transaction frequency is still not very high, as is market growth. Perhaps the added ease of contactless will help spark the Belgian market.

6.3 - COMPETITIVE- AND PRICING STRATEGY

Theory from paragraph 2.1.1, Understanding value on “Crafting market strategy” and 2.2.2, Creating value on “Managing market offerings” and “Business channel management” is used to best address this question. Following this, a choice of strategic intent must be chosen. As CCV strives to offer one generic product to a large number of vending operators, thereby competing on price and service, the best strategy would be one of operational excellence, defined as “providing customers with reliable products or services at competitive prices and delivered with minimal difficulty or inconvenience”. (Treacy & Wiersma, p. 84)

Now the firm's strategic intent formulated, it can be put into practice by answering three questions: “what do we know”, “what do we want to accomplish”, and “how will we do it”. Addressing the first question, CCV’s knowledge mainly concerns retail, parking, and ticketing payment terminals, payment systems, and payment infrastructure in The Netherlands, Belgium, Germany, and Switzerland. There is also a large amount of technical knowledge embedded in the firm, allowing CCV to see opportunities through technological innovation. This paper also provides knowledge; this mainly regards the current European payment market and vending. The second question is in line with the research objective, CCV wishes to enter the vending market with the best market offering and accompanying business strategy, delivering superior customer value in order to maximize profitability. Following from the field assessment, it can be added that the market offering must consist of a contactless reader.

The third question, how to do it, should emerge from the aforementioned operational excellence strategy. This means competing on service and on price. CCV is used to providing a high level of service to its four countries of residence, but it is important that CCV retains this level as it spreads out its service to other countries such as Spain, Ireland, Portugal, the United Kingdom, Estonia, and the aforementioned growth regions. It must be decided whether prices vary transnationally, as the next best alternative can change per country. Therefore a choice must be made to use unified pricing, or pricing bandwidths. In doing so, prices can vary at an agreed upon range around the target price. In non-Euro countries like the United Kingdom, Switzerland and Turkey, this is adopted more easily due to the difference in currency.
According to Brouwer, the purchase cost of chip and debit readers lies around 600 to 700 Euros. The margin, assembly cost, and price of the security access module (SAM) then drive the final price up to around 1100 to 1500 Euros. Prices of coin and bill validators have already been stated to lie around 400 Euros, and magnetic closed loop readers cost in the area of 150 Euros to purchase, although these then require a costly backend software package. As a contactless reader also heeds assembly and SAM cost, and it provides clear user advantage, its total value is greater than that of a chip reader.

As Anderson & Narus propose, a value model can help demonstrate prospective value of a new technology to the customer. They stress that this is especially critical if the price of new technology makes the market offering itself more costly than alternative more established and familiar choices. This is the case for contactless: Brouwer calls for flexible pricing and states that it is important for CCV to find a good division between fixed and variable costs. Maas International affirms this, proposing low fixed costs and subsequent payment per transaction. Taken together, if CCV would adopt this flexible pricing, it would share the perceived risk of investment in contactless with its customers, thereby creating goodwill and making it easier for vending to choose contactless. As with a market penetration strategy, CCV would share the value of its offering with the customer as an incentive to purchase. This would normally mean asking a lower price. However, by sharing the risk in such a pricing strategy, CCV should see something in return. Therefore it is best to develop a value model that divides its pricing in such a way that it acts as a penetration strategy on the forehead and over time heeds substantially larger turnover per market offering in comparison to the turnover generated by the fixed price of the chip reader.

To sell its offerings, the approach of the value merchant who “recognizes the costs and value associated with each element of a market offering and seeks an equitable return for both the supplier firm and customer firm” (Anderson & Narus, 1999, p. 269) considers the broad offering package. Because a product such as a contactless reader demands a large user base to generate value, merchants cannot be certain that their product will gain its full value potential. This uncertainty generates risk, and this makes merchants hesitant. In this case, a value merchant will be better equipped to sell a product, as he can persuade a merchant by showing him not just a good price, but the prospective value of his offering.

6.4 - ANSWERING THE RESEARCH QUESTION

When considering what market segment, country, competitive- and pricing strategy deliver superior customer value for CCV, the following can be concluded. First, the target market segment that will initially be focused on is open-loop vending in companies and organizations, and in public vending.

Second, the countries to be targeted are Spain, Ireland, Portugal, the United Kingdom and Estonia. Also, Slovakia, Romania, Latvia, and Lithuania proved to be interesting growth regions. If CCV prefers trialng locally first, Belgium proves to be the best option.

Third, in approaching these business markets, the best competitive strategy is one of operational excellence, defined as “providing customers with reliable products or services at competitive prices and delivered with minimal difficulty or inconvenience”. (Treacy & Wiersma, p. 84) The pricing strategy must be one of flexible pricing, where CCV shares the risk of the new innovation with its customers by charging a small fixed price and concurrent small price per transaction. This first acts as a penetration strategy, and in the end, this pricing combination should generate a higher turnover than a normal reader would. In selling this, the total value of the broad offering package must be emphasized.
7 - CONCLUSIONS AND DISCUSSION

7.1 - ANSWERING THE RESEARCH PROBLEM

CCV wishes to enter the European vending market with a new payment product and want to know how to do so and with what market offering. The research problem is formulated as follows:

“WHEN CONSIDERING THE CURRENT EUROPEAN PAYMENT MARKET, WHICH NEW PAYMENT METHOD WILL BE ADOPTED ON A WIDE SCALE AND HOW CAN CCV USE THIS AS A VENDING MARKET OFFERING?”

The solution to this problem logically follows from the answers to the three research questions. Chapter 4 results in a number of payment methods assessed in chapter 5. The results of the field value assessment held in chapter 5 clearly favor contactless, where the contactless credit and debit cards score highest and m-payment follows in second. As both technologies make use of contactless NFC technology, they make use of the same contactless EMV-compliant reader.

Both NFC technologies are still in the early stage of adoption, with contactless credit cards in the early phase of adoption and m-payment in the trial phase. However, the enormous investments made in both technologies make a strong case of their developers and facilitators distributing them among consumers in a technology-push strategy. The expectations are high for contactless to be adopted on a large scale, with the credit card as the first contactless product. Speculation surrounding contactless acquiring a significant market share differ from the year 2011 to 2016, but in this research no individual or organization has been encountered who would dispute contactless as a payment method widely adopted in the near future. M-payment projections are confident, but dates are not often given. Also, the role of the TSM to adequately steer the development and adoption is still nonexistent. A clear business model for m-payment has still to emerge, but when it does m-payment will become a serious alternative to contactless cards.

It is expected that CCV will quickly be able to handle contactless credit transactions, thereby making use of the micropayment chip which is key to penetrating the vending market with contactless credit. This micropayment chip allows users to easily make small value payments without having first charge the chip and without having to input a code. Cardholder effort is the key, which is why vending operators are ready for contactless. In the future, the same contactless reader can then serve contactless debit transactions or m-payment. These multiple fields of application strengthen the conclusion of this paper.

Chapter 6 defines the best market segment, country, competitive- and pricing strategy to deliver superior customer value. The target market segment found is open-loop vending in companies and organizations, and in public vending. These segments will be targeted in Spain, Ireland, Portugal, the United Kingdom and Estonia. Also, Slovakia, Romania, Latvia, and Lithuania proved to be interesting growth regions. If CCV prefers trialing locally first, Belgium proves to be the best option.

In approaching these business markets, CCV can best adopt a competitive strategy of operational excellence, defined as “providing customers with reliable products or services at competitive prices and delivered with minimal difficulty or inconvenience”. (Treacy & Wiersma, p. 84) The pricing strategy must be one of flexible pricing, where CCV shares the value and risk of its offering with its customers as an incentive to purchase. Therefore it is best to develop a value model that charges a low sales price for the market offering and subsequently charges a small amount of money per transaction. This pricing combination first acts as a penetration strategy, and on a longer time span generates a higher turnover than a normal reader would. In selling this, the total value of the broad offering package must be emphasized.
To sell this offering, the approach of the value merchant who “recognizes the costs and value associated with each element of a market offering and seeks an equitable return for both the supplier firm and customer firm” (Anderson & Narus, 1999, p. 269) will show customers not only a good price, but the prospective value of the offering.

7.2 - RECOMMENDATIONS

Recommendations regarding the market offering:

- The market offering must be a contactless EMV-compliant NFC reader.
- The NFC reader must be easily recognized as a reader of contactless payment media. This can be done by applying logos, possibly backlit, and LEDs to bring attention to the device.
- The NFC reader must be durable enough to withstand environments resulting from the market segment choice, such as public vending.
- The NFC reader must be able to fit into a standard frame within a VM.
- The NFC reader must be able to interface with the VM’s operating system, consisting of transaction processing, online transaction validation, and product issuance.

Recommendations regarding market selection:

- The market segment to be targeted is open-loop payments in companies and organizations, and the public segment.
- Based on expectations of relatively quick contactless payment method adoption, markets in Spain, Ireland, Portugal, the United Kingdom and Estonia must be first targeted.
- Considered growth markets, Slovakia, Romania, Latvia, and Lithuania serve as a second target market. However, more research must be done first (see paragraph 7.3, Discussion).
- If CCV prefers trialing locally first, it must not do so in the Netherlands or Germany. Belgium proves to be the best option.
- Switzerland, Turkey and France must be subjected to market research (see paragraph 7.3, Discussion).

Recommendations regarding market entry:

- CCV must strive to provide its customers with reliable products or services at competitive prices and delivered with minimal difficulty or inconvenience, competing on service and price.
- A choice must be made to use unified pricing, or pricing bandwidths (see paragraph 7.3, Discussion).
- CCV must develop its pricing in such a way that it acts as a penetration strategy on the forehand and over time heeds substantially larger turnover per market offering in comparison to the turnover generated by the fixed price of the chip reader.
- CCV must find an optimal division between fixed and variable costs for its flexible pricing (see paragraph 7.3, Discussion).
- The approach of the value merchant must be taken in selling the product.
7.3 - DISCUSSION

This research shows how the combination of business to business marketing theory from Anderson & Narus and technological diffusion literature from Narayanan and Rogers can be applied to a research problem that encompasses the uncertainty surrounding the adoption of certain technological innovations, the selection of an appropriate innovation, and the subsequent building of a market entry strategy around this selected innovation. In this respect, the field value assessment provided a useful framework to compare the adoption potential of different innovations.

In executing this research, a number of limiting factors were encountered. Missing statistical data created a limiting factor that proved to be a problem in two respects. First, the EVA (European Vending Association) refused to give out any statistical information concerning the diffusion, adoption, and specifications of VMs in Europe. This is due to its market analysis, which is to be for sale in mid-May of this year. Because of this, claims regarding the 'where' question were solely based on payment statistics and a meager table covering the total number of VMs in thirteen European countries in 2004. There are also no statistics on the diffusion of payment method or online connections within vending machines, making it difficult to make specific recommendations for different countries. To obtain a fair clearer picture of the European vending market, statistical data on vending diffusion, adoption, and specifications over a period of time must be obtained.

The second group of missing statistical data is that of the country payment statistics, as the ECB had no data on Turkey and limited data on Switzerland and France. All three countries are shown to be important for vending, as France had the most vending machines of Europe in 2004, Switzerland has already started adoption of the contactless credit card and Turkey is known as a country in which contactless is already used in many applications. On a side note, although data from Turkey is absent, Cyprus may hint to its statistics as it is politically divided in Turkish and a Greek territory. It is therefore thinkable that the Greek territory holds card usage statistics relatively low, and the Turkish influence leans towards a large amount of card use. Also, data was missing relating to the adoption of contactless payment methods. To be able to compare all countries in Europe, further research must be done to obtain missing statistical data, mainly from Turkey, Switzerland, and France, and contactless adoption data from Europe in general.

The final limitation of this research is the ‘relative advantage’ qualifier used in the field value assessment. As a qualifier for payment methods, it is quite broad if not too much so. As described in chapter 5, Payment method choice, there are many different advantages (e.g. speed, safety, less handling costs) offered by the respective payment methods. Moreover, ‘relative advantage’ was interpreted by some respondents as a conclusive qualifier for the costs and benefits side, comprised also of ‘compatibility’ and ‘ease-of-use’. Therefore, further research must address the different advantages that payment methods have to offer and use these to better qualify the relative advantage. For now, though, the results obtained will do as they hail the same ranking as the overall qualifier sums.

In general, further research must concentrate on finding vending-specific and payment-specific data per country on a time scale. In doing so, it is important to obtain data for the currently missing countries Turkey, Switzerland, and France, the domestic countries of potential interest being Belgium and Switzerland, and the growth areas being Slovenia, Romania, Latvia, and Lithuania.

Research must also be done into the market of closed payment systems. As CCV has no experience in this field, and developing such a software package would need considerable investments, it is not considered a realistic option within this paper. Therefore it is advisable to research if developing a closed loop market offering with software package somehow generates a good business plan.
Finally, market research must be done to find the optimal flexible pricing of the market offer, as well as to decide whether the prices are unified across borders, or vary within pricing bandwidths. Flexible pricing calls for a low purchase cost and subsequent payments per transaction. CCV must use payment statistics to discern a trend of contactless adoption together with vending purchase value related to chip and debit readers. It must then combine this with a risk analysis to apply an interest percentage on top of the variable price in accordance with the risk. Finally, it must use this data to obtain a total value, and find an optimum division between fixed and variable costs at a chosen payback period.
8 - REFERENCES

8.1 - LITERATURE


8.2 - SECONDARY DATA

9 - APPENDICES

9.1 - INTERVIEW DESIGN

9.1.1 - Creating a context

A1 What exactly is your function within the company / duration of employment / field of interest / background (previous function, previous employer)?

A2 Have you / your company had any recent business-related experience with the European payment market (Jaski) / vending market (Rabobank, foreign CCV offices) and please describe this?

A3 Do you yourself already use a relatively new payment method? If so, which one and are you happy with it?

A4 Are you a frequent customer of vending machines?

9.1.2 - New payment methods valued

This is part two of the four part interview. This part requested of you to value four new payment technologies by qualifying thirteen qualifiers for each payment method.

Please note that your answers are presumed to represent your company’s view. Also, please keep in mind that we are addressing the European market.

We will be valuing four new payment methods that can possibly be applied to vending machines. These are:

a. European debit card
   Maestro and, similarly, the V-Pay brand.

b. EMV credit card
   The EMV compliant credit card, with or without magnetic swipe strip.

c. Contactless debit/credit card
   An EMV compliant debit or credit card with contactless NFC technology.

d. M-payment
   Payment by mobile phone using NFC technology.

Please feel free to elaborate on why you rate a specific payment method in a certain way. Each payment method will be rated on a 5 point Likert scale. They are formulated in a way that rating in agreement is better for the payment method (i.e. answering ++ gives a more positive score).

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
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<tbody>
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<td>--</td>
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<td>0</td>
<td>+</td>
<td>++</td>
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<tr>
<td>Question</td>
<td>a</td>
<td>b</td>
<td>c</td>
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<tr>
<td><strong>Innovation</strong></td>
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<tr>
<td>1.1. Ease-of-use</td>
<td>Is it a consumer friendly solution for vending machines?</td>
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<tr>
<td>1.2. Relative user advantage (1)</td>
<td>Compared to cash</td>
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<td>1.3. Relative user advantage (2)</td>
<td>Compared to the current alternatives (among one another)</td>
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<tr>
<td>1.4. Compatibility</td>
<td>Is it easily compatible with existing systems and values?</td>
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<td>1.5. Trialability</td>
<td>The possibility of trying the innovation on a limited basis first</td>
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<td>1.6. Observability</td>
<td>The visibility of innovation results to others</td>
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<tr>
<td><strong>Community</strong></td>
<td></td>
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<tr>
<td>2.1. Low prior technology drag</td>
<td>The innovation will be adopted, even though an older technology with an established adoption network is still being used (i.e. because of greater long term benefits for the new technology).</td>
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<td>2.2. Low investment risk</td>
<td>Investments are low (low price) or easily reversible</td>
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<tr>
<td>2.3. High level of sponsorship</td>
<td>Many / powerful organizations promote the adoption of an innovation</td>
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<tr>
<td>2.4. High expectations</td>
<td>If enough firms and organizations hold positive expectations for the adoption of a new technology, their combined positive attitude will facilitate in making it happen</td>
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<tr>
<td><strong>Population</strong></td>
<td></td>
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</tr>
<tr>
<td>3.1. High level of communication</td>
<td>Because more information leads to less risk, the adoption of a technical innovation relies on technical expertise of both personnel in firms and consumers amongst the public</td>
<td></td>
<td></td>
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<tr>
<td>3.2. Opinion leader backing</td>
<td>After its market introduction, early adopting consumers are expected to convince other consumers to use this payment method</td>
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<tr>
<td>3.3. Cultural norms</td>
<td>Variations in culture will speed up the diffusion of this payment method</td>
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</tbody>
</table>
9.1.3 - Vending market specific

C1 Which new payment method is most likely to be applied to vending machines? Why?
C2 Is it best to apply the aforementioned new payment method as a replacement or in addition to the cash slots?
C3 How do you see the possibilities regarding the migration path of the technology (i.e., within a year, the best payment module will be a hybrid of technology a. and b.)
C4 Regarding ease-of-use, is the aforementioned new payment method also the best choice for the consumer?
C5 Vending: How large is the European vending market?
C6 Vending: How would you define the most relevant market segments? How would these segments score on the previous section’s Ease-of-use qualifier?
C7 Vending: What is the right price for a payment module in a vending machine?
C8 Vending: What is the relative market share for closed loop systems and how do you expect this to progress in the future?
C9 Will vending machines need to be connected online to accommodate new payment methods? What does this mean for the operator in terms of adoption and cost?
C10 How would you design a contactless reader? Blinking lights to draw attention / audible beeps after transaction?

9.1.4 - Debit card

D1 Do you believe that Europe’s domestic (national) debit card schemes will survive beyond the end of 2010? Why? Robobank: What about the ChipKnip?
D2 Non-vending: EC-Cash is predicted to be one of only four surviving domestic debit card schemes, do you agree? What other systems and will these continue to be used in the vending market?
D3 After the Eurocheque in the 1990’s and the cross-border success of the Maestro and, similarly, the V Pay brand, do you believe that a third scheme will be successfully launched within 3 years?
D4 Bank: Is the following thought realistic and would you care to comment on it: “What is needed are the key enablers of harmonised inter-bank scheme rule book and an agreement to support the creation of a network with strong connectivity and reach. Because of the similarities of the ATM domain with those of direct debits and direct credits for which the SEPA scheme/rule books have already been developed, a common ATM scheme can provide a platform to construct a competitive debit card scheme. This simplifies introduction and promises a large scale participation of banks.” (Jones, 2007)

9.1.5 - Credit card

E1 In view of the adoption of the credit card as a payment method in vending machines, how important is it that the credit card is perceived as safer than contactless payment?
E2 What must happen for an EMV credit card to find its way into vending machines / how do you estimate the chances of this happening?
E3 To what extent do international consumers (North American, Asian) contribute to European credit card use (i.e. use at airports) and how important is, therefore, this market?
### 9.1.6 - Contactless

| F1 | **Non-vending**: how do you see the European market for contactless terminals / how large / annual growth / what is your position / what product(s) do you offer this market? |
| F2 | **Non-vending**: can technology available to countertop devices also be integrated into a device that fits a vending form factor? |
| F3 | **Non-vending**: how do you see the European contactless debit and credit card market / how large / annual growth / what is your position and what will you offer at which point in time? |
| F4 | **Non-vending**: Is the move to SEPA helping the adoption of contactless or is it, for instance, costing too many resources, thereby slowing the adoption of contactless? |
| F5 | Will EMV debit or credit cards be suitable for low value payments (under 5 euros) within 3 years? Why? |
| F6 | **Non-vending**: would you give me an indication of the over the air (OTA) transaction fees charged by the acquirer? How much of that can be ascribed to the fees charged by debit/credit card companies? Is there also an interchange rate added on top of this? How do you expect these rates to progress in the near future? |
| F7 | Because a cash transaction has the perception of being free of additional charge, for a consumer to pay a fee over OTA transactions, he will expect something in return. What is there to offer? |
| F8 | What must CCV (together with Rabobank) do to set this market in motion? What must CCV invest in to do so? |
| F9 | Do you believe in the widespread adoption of contactless EMV debit/credit cards such as the Maestro/V-Pay or the MasterCard PayPass/Visa PayWave? |
| F10 | What is your vision on the possibility to use NFC to deliver coupons and loyalty programs through the cell phone? Is this a foreseeable option for the near future? |

### 9.1.7 - M-payment

| G1 | The adoption of m-payment finds a complex problem in the power struggle between banks, mobile network operators and telephone manufacturers (explanation: it is in the best interest of all parties to find a solution where they themselves provide the security element, the chip that authorizes payments.) In this light, what is your reaction on the following statement: “This is such a heavily regulated market, it’s hard to believe any mobile network operator would want any part of that, banks are going to stay in command.” |
| G2 | How do you expect the aforementioned power struggle to be settled / when / do you play a role in this / which role? |
| G3 | Do you believe that the TSM (Trusted Service Manager) is the answer? How do you see the TSM’s role: merely as an intermediary who smoothes the transfer of data or more actively as a referee promoting user friendliness and collaboration between stakeholders? |
9.1.8 - S-curve of diffusion

Below diffusion curves are to be drawn to represent each payment product’s life within the vending market.

<table>
<thead>
<tr>
<th>Payment method</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td></td>
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<tr>
<td>European debit card</td>
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<td>EMV credit card</td>
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<tr>
<td>Contactless debit/credit card</td>
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<tr>
<td>M-payment</td>
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</table>

9.1.9 - Final thoughts

H1  How do you think innovative technology will change the customer’s perception of vending and when do you expect this to happen?

H2  How do you envision payment in the vending market in the not-so-near future?