Msc Business Administration, specialization Marketing Management

The Influence of Social Marketing on Adoption of Social Innovations:
A Dyadic Study on Ceramic Pot Filters

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Executive summary

This research focuses on the adoption of ceramic water filters. Ceramic water filters are filters that can provide clean drinking water to their user and are mostly produced and marketed by NGO's in developing or less developed countries. More specific, this research focuses on the reasons that make people decide to buy a product like a ceramic water filter and how they are approached best in terms of social marketing.

The main research question focuses on how social marketing can influence the adoption decision of social technology innovations as the ceramic water filters in less developed countries, since, although these filters have the potential to significantly improve life and health of the user's, not all consumers choose to adopt the product. To come to an answer on this question, several sub-questions are formulated focusing on innovation adoption, consumer behavior and social marketing to guide both a literature and empirical research. Based on the literature search a framework is constructed that is then tested empirically through a dyadic approach, that includes both quantitative market data and qualitative marketing information of the producers.

The literature search on innovation adoption shows that consumers go through several cognitive steps from the time a new product is introduced to the moment they actually purchase it. Following the innovation decision process of Rogers (2003) they need to know the product and need to get convinced of the product, before they decide to buy and use it. Then, when they use it the product must meet expectations for continuous adoption. Since the attitude towards the product is formed and the buying decision is made between persuasion and decision, these stages in the process seem to be critical for adoption. However, sometimes an individual adopts the product in his mind, but fails to act upon the adoption. It means that an individual thinks and talks positive about a product but for some reason does not buy the product himself. This phenomenon is called symbolic adoption.

The search in consumer behavior literature states by the theory of reasoned action (Azjen and Fishbein, 1973), that a decision to adopt or buy a product is made based on a positive or negative assessment of several antecedents of the product. In the case of the ceramic water filter, articles on water filters, and comparable products suggest that these variables vary between economic / marketing variables, emotion, social norms and hygiene variables.

The search on social marketing showed that social marketing focuses on changing behavior, which, as in the case of the ceramic water filter, is often reached by marketing a facilitating product. Therefore, social marketing often needs to focus on two things, promoting behavioral change and promoting the facilitating product. In the case of the ceramic water filter it is therefore expected that these two marketing activities influence the consumer behavior antecedent or variables and therefore influence symbolic and actual adoption.

In the empirical research a survey is held under 129 users and non-users of the ceramic water filter in Cambodia that were approached in the years before by water filter

producers with either with a focus on the facilitating product or with a focus on the social idea or habit to assess how social marketing currently influences adoption.

The results show that a stronger focus of social marketing on changing behavior, leads to a lower perceived price and stronger social norms on buying the filter. This means that villagers are discussing the product with each other, urge each other to buy the product, think better of themselves when buying the product and perceive the price as lower –and thus the value higher- when approached by this focus. A stronger focus on the facilitating product leads to a better perception of the distribution and quality of the product. Emotions do not give any significant results and the hygiene variables show both positive and negative results for both approaches.

Furthermore, the results show that symbolic adoption for the water filter is related to social norms, perceived quality, perceived price, the frequency in which they wash their hands and to the used toilet facilities. Therefore one can say that people that think better of the filter in terms of quality and price, discuss the filter with family and friends, and already act according to and invest in hygiene tend to be stronger symbolic adopters of the filter.

Also, the analysis shows that respondents that have bought the ceramic water filter more often think better of the quality of the filter, think it is easier to find a store where they can buy the filter, more often wash their hands and use / have better toilet facilities. These results suggest that people that think better of the filter in terms of quality and distribution and value hygiene more than other people of their community tend to buy the filter more often than others.

Taking into account all these insights, the best results of social marketing for the ceramic water filter can be obtained by a balanced combination of marketing of the social idea and marketing of the tangible produc,t since they both have their positive outcomes that can support each other: A focus on the social idea and habit (drinking purified water) to make people think and discuss the filter and make them form positive attitudes to the filter leading to strong symbolic adoption and a focus on the tangible product (the filter) to gain high perceived quality and -most importantly- better (perceived) distribution to take advantage of the symbolic adoption and actually sell the filter.

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Foreword

It is commonly known all over the world, that for a human being to survive it needs water, clean drinking water. However, not all humans have access to clean drinking water or know that the water they are drinking is -in fact- contaminated.

The WHO estimates that 1.8 million people die every year because of diarrheal diseases. Of this 1.8 million 90 % are children under five (WHO, 2004). WHO states: "88 % of diarrheal diseases is attributed to unsafe water supply, inadequate sanitation and hygiene. Improved water supply can reduce diarrhea morbidity by up to 25%, if severe outcomes are included and improvements in drinking-water quality through household water treatment, can lead to a reduction of diarrhea episodes by between 35% and 39%."

To tackle this massive problem several global UN projects were started in the past decade[1]. Water supply, sanitation and hygiene were included in the Millennium Development Goals (GDCs) in 2000 and the decade 2005-2015 was declared as the International Decade for Action, "Water for Life", to set the world agenda on a greater focus on water- related issues.

A substantial number of Dutch water related organizations have actively participated these projects for more clean drinking water[1], [2]. The Dutch Government subsidizes projects of these organizations and so far 14,4 million people have gained access to clean drinking water through these projects. The aim is to provide clean drinking water supply to 50 million people by 2015.

In one of these projects companies and institutions have joined forces in a project group of "Aqua for All" (A4A, see box 1) for further development and acceptance of a drinking water treatment system for households around the globe. The system, that uses ceramic water filters (CWF), is low cost and easy to produce. Therefore, this system seems very suitable for implementation in developing countries.

When I learned that A4A was looking for a marketing student to conduct a study on the marketing of CWF's and to find out what activities are effective and to find out how to get more people buying the filter, I did not have to think long about taking the job. In the years before I had lived, studied and traveled in Asia and was happy with the chance of giving something back.

Box 1: "Aqua for All"

The Aqua for All foundation was created in 2002 and intends to create a link between Third World water and sanitation projects, sponsoring and socially responsible entrepreneurship. "Aqua for All" acts as a broker to establish sustainable, long lasting partnerships between Dutch water partners and local beneficiaries and has several project groups under its wing to develop distinct projects like the Ceramic Water Filter.

The foundation is supported by participants and donors in the form of water companies, water boards, private companies and consultancy agents and has partnerships with colleague NGO's like Unicef, Novib, ICCO, Cordaid, Amref and Simavi.

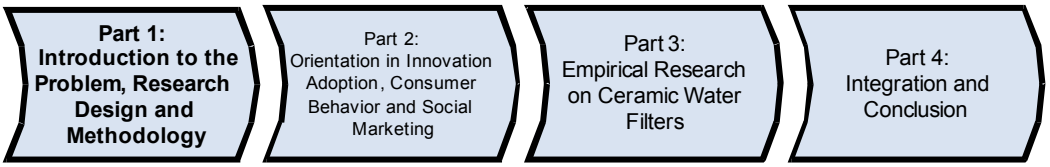
[1] www.waterforum.net
[2] www.minbuza.nl

With this small contribution to the extensive field of research that has already been done in the past and is done as we speak, I hope to increase understanding of the buying and adoption decision that is made by users and non-users of the ceramic water filter once exposed to the product. I hope current and future producers can use the research to more effectively focus their marketing and promotion activities.

I know I would have not been able to conduct this research all-alone and I would therefore like to thank a number of people. First of all, I would like to thank Marcel Tielemans, Jan Nederstigt and Elise Brandwijk from A4A for giving me the opportunity to perform this research. I would like to thank my university supervisor Prof. dr. Janny Hoekstra for guiding me through the process and co-assessor dr. Wander Jager for his final opinion. Next I would like to thank Michael Roberts and Heng Satya of IDE and Marc Hall and Sosamrach Khim of RDI for helping me to start off the research in Cambodia and finding suitable areas for conducting the first surveys. I would like to thank Srea Ra and Vibol for translating during the research and especially I would like to thank Vannak, for not only translating, but also for thinking ahead on how Cambodians would think and react and for showing me his country and culture. It has been fun!

Job

Part 1: Introduction to the Problem, Research Design and Methodology



1. Introduction and Problem Specification

1.1. Introduction

Many strategy scholars view innovation as a primary means for value creation that enables firms to change the competitive status quo in markets and displace entrenched competitors (Moran and Ghoshal, 1999; Rindova and Petkova, 2007). With innovations, firms have the opportunity to change the market; they can renew the value of their assets and discover new uses and combinations for their existing resources (Dougherty 1992, McGrath et al., 1996). Empirically and conceptually, product innovation has been related to firm market share (Chaney and Devinney, 1992), survival (Tripsas, 1997), and adaptation to changing market and technological conditions (Eisenhardt and Tabrizi, 1995; Rindova and Petkova, 2007). In a commercial context, market share, survival and adaptation to change are important in increasing profit. However, they are logically all the result of innovation *adoption.*

The commercial potential of innovations is an interesting characteristic for commercial organizations. However, the principle of innovation adoption itself can also be the number one aim. This research focuses on social technological innovations. Social technology innovations are innovations whose primary aim is a social, common-good objective, with a financial or profit objective as a subsidiary or parallel aim (Murcot, 2006). Therefore, the principle aim is adoption of the innovation to benefit the user. Examples of social technological innovations are Solar Home (energy) Systems in Sri Lanka, China, Indonesia etc. and household drinking water treatment systems.

Because of the nature of these innovations it is evident to consider the uncertainties and risks associated with innovation. Innovation researchers have observed that customers encounter considerable difficulties in recognizing the value of novel products which hinders adoption, and have stressed repeatedly the need to better understand the cognitive processes involved in the adoption of new technologies (Basalla 1988; Clark 1985; Dougherty 1990, 2001; Hargadon and Douglas 2001; Leonard-Barton 1995; Pinch and Bijker 1987; von Hippel 1988).

In response to this call, innovation researchers have studied the processes through which the value of new products and technologies is constructed (e.g. Dougherty, 1992, 2001; Rosa et al., 1999; Rogers, 1962, 2003; Rindova and Petkova, 2007). Dougherty (1992, 2001) observed that successful product innovation and adoption is a creative process involving successive cycles of learning by customers and producers. She notes that in markets for new products, customers may not be able to articulate or even know their (latent) needs and that these may change over time as they learn to use the products. Rosa et al. (1999) similarly document how interactions among producers, customers, and the media lead to the construction of the attributes that come to define to the value of a new product. Rogers (1962, 2003) even created an innovation decision process explaining 5 stages a consumer has to pass before adopting a product. All authors conclude that new markets emerge when producers develop shared knowledge structures, or schemas.

Understanding how firms develop these shared knowledge structures by enhancing perceptions of value of customers is an important issue for innovation research because such perceptions determine subsequent behaviors toward the innovation, such as

purchasing, adopting and recommending it to others (Boyd and Mason, 1999). This research develops a framework that gives insights on how consumers make the decision to adopt the social technological innovation of the ceramic water filter and focuses on the question of how social marketing can influence this adoption. Differences between users and non users can provide knowledge about why individuals choose to adopt or reject a product and contributes to the understanding of how shared knowledge structures are constructed.

Social Marketing is, broadly speaking, the application of marketing principles and exchange to social issues (Domegan, 2008) and it is best known for its use in campaigns related to public health and the environment. Successful strategies dealing with obesity, tobacco consumption, family planning, safe sex, recycling, waste management and water purity are more common applications (Kotler et al., 2002; Andreasen, 2002; Hastings, 2003). These examples differ in nature, in the way that some campaigns totally focus on the marketing of new behavior and others focus on the marketing of a tangible object. Family planning, safe sex and water purity for instance focus on condom and clean water use. However their similarity evolves around the fact that social problems often have underlying behavioral causes. As social marketing is about influencing behavioral exchange outcomes, there has been dramatic growth in its use (Gordon et al, 2006) and it seems the appropriate way for influencing adoption of social technological innovations.

1.2. Management goal and Research Questions

In 2007 four representatives of the project group of "Aqua for All" visited Cambodia to discuss topics of attention with representatives of three different CWF production facilities. Through several discussions, it became clear that opinions on the marketing of CWF differed and that new producers were unsure how to start (Tielemans et al., 2007). To help overcome this problem, the project group of "Aqua for All" decided to participate in a thesis research project with the following goal:

To gain knowledge and understanding through research about the social marketing aspects of the Ceramic Water Filter (CWF) to help local CWF production facilities in the marketing of their products.

The aim of this research is to help them reach this goal and based on the management goal, the following main research question is obtained:

How can social marketing influence the adoption decision of social technology innovations as the ceramic water filters in less developed countries?

This question evolves around the main themes of this research, innovation adoption, consumer behavior and social marketing.

To come to an answer to the main research question, three research sub questions need to be answered. These sub-questions are aimed at the different aspects that are included in the main questions. By gaining insights on these separate aspects first, a more balanced and integral answer can be formed for the main question:

1) How does a new product come from introduction to adoption in the mind of a consumer?
2) Why do people buy / use a social technology innovation as the ceramic water filter, what are important variables?
3) How does Social marketing effect the variables that influence the adoption decision of a social technology innovation as the ceramic water filter?

The first question is aimed at innovation adoption, since that –in the end- is the goal to which this research should contribute: More people should gain access to clean drinking water and ceramic water filter adoption is a way to reach this goal. For individuals to adopt a product, they need to go through an innovation decision process (Rogers, 2003, Blackwell, Miniard and Engel, 2001), positively assess the product and then buy and use it. This question is only answered based on theory.

The second sub-question is aimed at consumer behavior and the reasons why individuals choose to adopt a product like the ceramic water filter. If one wants to influence an individual to adopt a product, one first needs to understand what reasons the individual might have to adopt or not adopt the product. This question is answered in theory and through empirical research.

The third question is aimed at Social Marketing. According to literature (Andreasen, 1995, Kotler and Roberto, 1989 and Kotler, Roberto and Lee, 2002) social marketing is –if used correctly- a very powerful tool to change behavior. Since the goal is to change adoption behavior one needs to understand how social marketing can influence the reasons to adopt. This question is also answered through theory and through empirical research.

The research first aims to find answers to all three sub-questions by using literature. Based on these answers, a conceptual model is constructed. This model will then form the basis for a dyadic research is to find empirical results for questions two and three.

Finally all the answers, both theoretical and empirical, of the three sub-questions combined lead to a conclusion in which the answer to the main research question is given.

1.3. Research method

The research that is performed is a dyadic research linking qualitative insights on marketing activities to a quantitative analysis of why individuals adopt the ceramic water filter. In a dyadic approach, both information from producers and market data is used. Qualitative marketing information and quantitative market data is used to link marketing activities to adoption results. Therefore the research includes a visit of two production facilities in Cambodia.

The literature being used mainly comes from general marketing theory and focuses on general products or social technological innovations. However, since research sub-question two focuses explicitly on consumer behavior regarding the ceramic water filters, chapter 3 focuses explicitly on theory appropriate for the ceramic water filter.

The fact that the research focuses on a less developed country does not come back in the literature search since questions are to specific for the available information.

However the empirical part of the research is executed at a less developed or developing country.

1.4. Relevance

From an academic perspective the relevance of this research lays in the fact that usually little market information is available in developing countries and is hard to obtain (Ellis, 2005). Most academic research on marketing aspects therefore are based on more mature markets (Ellis, 2006; Farley and lehmann, 1986) and less is known on whether current theory also yields to less developed countries. Since this study uses insights from regular marketing and consumer behavior theory and assesses their importance and influence on adoption in a less developed country environment, it delivers useful insights on not only consumer behavior and marketing in developing countries, but also on the transferability of research based on developing countries to less developed countries.

From a management point of view this research gains insights on why individuals in a developing country adopt the ceramic water filter and how marketing can influence the adoption decision. The nature of the social technological innovation holds that the goal of the innovation is to help the common good. In this case the water filter contributes to the 7th millennium goal; it creates access to clean drinking water and helps to prevent diarrhea. Therefore, the insights that will help social marketers to increase the adoption rate of the filter directly help them fulfilling this goal and to better perform their task.

1.5. Report overview

This report and the research it describes is divided in four parts. The current part, *Part one,* is about the research itself. It explains the problem of marketing CWF's and why it is relevant to do this research.

Part two is the orientation and introduction to the subject. In this part literature is used to gain insights on adoption, consumer behavior and social marketing to construct a model that demonstrates how social marketing and adoption are linked.

Part three exists of the empirical research that is conducted Cambodia. It starts with explaining the methodology of this empirical part. The study aims on gathering information on two subjects. First, qualitative information is gathered on (social) marketing efforts that were taken in the past and their perceived success. Second, a quantitative analysis is performed to test the model constructed in part two and to gain insights on the relative importance of the different variables in relation to adoption.

The report ends with *part four* where all aspects and parts come together in an integration part. Results from the marketing efforts are compared to the outcomes of the quantitative analysis, so a conclusion can be drawn based on all these insights.

Figure one illustrates all four parts in one figure:

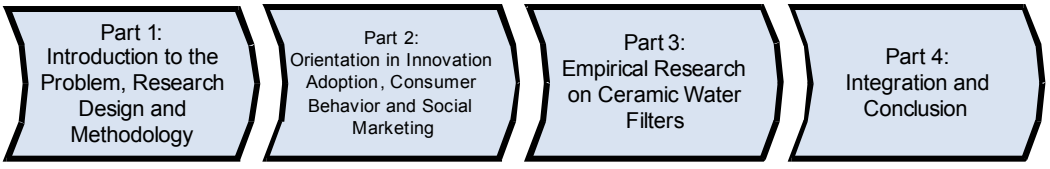
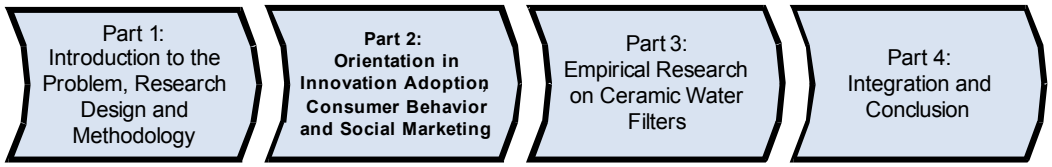


Figure 1: Thesis structure

Part 2: Orientation in Innovation Adoption, Consumer behavior and Social Marketing



2. Diffusion of Innovations

This chapter aims at finding insights based on general marketing theory into how a new product comes from introduction to adoption in the mind of a consumer. Therefore, section 2.1. starts by explaining the key concepts of this matter: innovation, adoption and diffusion. Then, the attention moves to the innovation decision processes (section 2.2.) and specifically on the innovation decision process by Rogers (section 2.3.).

2.1. Innovation, Adoption and Diffusion

An *innovation* is an idea, practice or object that is perceived as new by an individual or other unit of adoption (Rogers, 2003). It matters little, so far as human behavior is concerned, whether or not an idea is objectively new as measured by the lapse of time since its first use or discovery. If it seems new to the individual, it is an innovation.

When an innovation comes to the market potential users can decide to *adopt* the product, a decision to make full use of an innovation as the best course of action available (Rogers, 2003). *Diffusion* then is the process by which the innovation is communicated through certain channels over time among the members of a social system (Rogers, 2003).

2.2. Innovation-Decision Processes

The field of innovation adoption and diffusion has been a field of study for at least 50 years. There have been various attempts to trace the process that individuals go through before making a decision to adopt an innovation based on product characteristics (e.g. Feder, 1982; Fliegel and Kilvin, 1966; Zaltman, 1973; Rogers, 1962, 2003; Srivastava et al., 1985), personal characteristics (e.g. Robertson et al., 1984; Bass, 1969) and perceived risk (e.g. Ostlund 1974). These models, called innovation decision processes, show resemblance to models in the buyer behavior literature (Parthasarathy et al., 1995). Moreover, in these models purchase and usage are used as a proxy for adoption illustrating their connectedness to ordinary buying behavior (Parthasarathy et al., 1994; Nabih et al., 1997).

Rogers first introduced his innovation-decision model in 1962 in the first edition of his book “Diffusion of Innovations” (Rogers, 1962). His model, like most innovation decision models, follows a “hierarchy of effects” model (Krugman, 1965; Ozanne and Churchill, 1971; Zaltman et al., 1973) and specifically it follows the traditional think-feel-do hierarchy of effects process (Barry, 1987; Batra and Ray, 1986; Gatignon and Robertson, 1985). Over the years Rogers constantly updated and reprinted his model in his book “Diffusion of Innovations” and it is still seen as one of the major contributions to the field of study (Blackwell and Engel, 2001). Even though there has been some criticism on the hierarchy nature of the model (Parthasarathy et al., 1995), his innovation-decision model still is the most popular model in Literature (Nabih, et al., 1997) and best applicable to adoptions under conditions of high involvement or cognitive processing (Gatignon and Robertson, 1991).

The nature of the innovation of ceramic water filters, with their relatively high price and their link to health, makes Rogers model (2003) of high involvement products applicable.

2.3. Rogers' Innovation decision process

The process described in the innovation-decision model of Rogers (2003) consists of a series of choices and actions over time through which an individual evaluates a new idea and decides whether or not to incorporate the innovation into ongoing practice. This behavior consists essentially of dealing with uncertainty that is inherently involved in deciding about a new alternative to an idea previously in existence. The perceived newness of an innovation and the uncertainty associated with this newness is a distinctive aspect of innovation decision-making.

The innovation-decision model exists out of 5 stages, knowledge, persuasion, decision, implementation and confirmation. The nature of these stages will be described in section 2.3.1. A graphical version of the model is shown in figure 2.

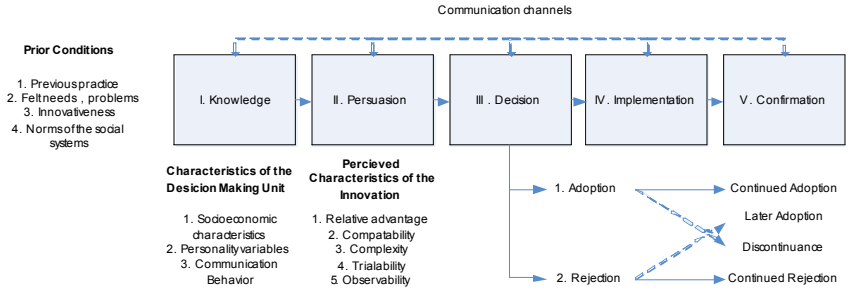


Figure 2: The innovation-decision process (Rogers, 2003)

2.3.1. Innovation-decision stages

Knowledge- This stage involves exposure to the innovation and an understanding of the innovation. To move trough this stage, the potential customer must learn what the innovation is, how it works and why it works. However, how a person receives and interprets the knowledge is affected by his or her personal characteristics.

Persuasion- This stage occurs when a favorable, or unfavorable attitude is formed toward the innovation. In this stage, the individual becomes more psychologically involved with the innovation. He or she actively seeks information about the new idea, decides what messages he or she regards as credible and decides how he or she interprets the information that is received. The main outcome of this stage is a favorable or unfavorable attitude towards the innovation. It is assumed that such persuasion will lead to a subsequent change in overt behavior (adoption or rejection) consistent with the individual's attitude.

Decision- This stage occurs when an individual engages in activities that result in a decision to either adopt or reject the innovation. Adoption involves both psychological and behavioral commitment to a product over time (Antil, 1988). Ordinarily, this means continued use of the product unless situational variables prevent usage. Consumers might also reject the innovation, and decide not to adopt. Active rejection involves the consideration of adoption, or perhaps even a trial, but a final decision not to adopt.

Passive rejection consists of never really considering use of the innovation. Since in this stage the trade-off is made between adopting the innovation and accepting the uncertainties and rejecting the innovation and it's uncertainties, trial is of great importance in this stage (Rogers, 2003).

Implementation- This stage occurs when the innovation is actually put to use. Although the decision to adopt is already made, uncertainty still plays a role in this phase. And individual particularly wants to know answers to questions as "where can I obtain the innovation?", "how can I use it?" and "what operational problems am I likely to encounter and how do I cope with them?" (Rogers, 2003).

The implementation stage may continue for a lengthy period of time, depending on the nature of the innovation. Eventually a point is reached at which the new idea becomes institutionalized as a regularized part of an adopters ongoing operations.

Confirmation- In this stage an individual seeks reinforcement for the decision made, but may reverse this decision (i.e. discontinue using a previously adopted innovation, or make a decision to adopt a previously rejected innovation), if exposed to conflicting messages about the innovation. At the confirmation stage the individual seeks to avoid a state of dissonance or to reduce it if it occurs (Rogers, 2003).

2.3.2. Adoption vs. Symbolic Adoption

The above indicates, that an individual first gains knowledge of a product (knowledge stage), forms a positive or negative attitude towards the product (persuasion stage) and then decides to buy or not buy the product in line with his attitude (decision stage). However, research has shown that individuals not always think and act in the same way (Beal et al., 1966; Bohlen, 1968; Rogers, 1968, 2003). So they successfully move trough the knowledge and persuasion stages, but do not move through the decision stage since something holds them back. The discrepancy that then exists between the persuasion and decision stage is called symbolic adoption. Rogers (2003) defines symbolic adoption as the adoption of symbolic ideas without material parallel. The underlying assumption is that all innovations include an idea component and that some innovations also include a material component (Rogers, 2003; Krampf et al., 1993).

2.3.3. Factors that Influence the speed of the innovation decision

The speed and rate to which individuals will move through the innovation decision process is dependent on several things. Some of these characteristics are situational and dependent on the specific situation; specific product and user attributes that determine the buying decision as will be explained chapter 3. However, Rogers (1962; 2003) distinguishes a few general product attributes and the existence of social networks as specifically important for the product's diffusion speed and are therefore briefly explained in this section.

The relative advantage, the compatibility, the complexity, the trialibility, communicability and risk of the product are the most important general product attributes that can influence or predict the speed of diffusion of an innovation (Rogers, 1962; 2003;

Ostlund, 1974) and a product that ranks higher on these attributes will usually lead to faster diffusion.

The social systems to which the individuals belong that are targeted by the product also often affect the speed of diffusion of a particular innovation. The rate of diffusion varies between individuals and societies based on cultural values, and the degree to which a society is futuristic, normal, or tradition oriented (Wills et al., 1991). In a comparable way potential adopters within a society can be divided in groups that are more likely or less likely to quickly adopt an innovation. Rogers (2003) distinguishes the groups of innovators, early adopters, the early majority, the late majority and the laggards based on their speed op adoption. Each group has it's own characteristics in terms of values, communication patterns, opinion leadership etc. which are important influencers for word of mouth.

Although the researcher acknowledges the importance of these items and they are included in this section to broaden understanding, they yield to far out of the scope of this research to be assessed in the empirical part of this research as separate items. These items focus at diffusion speed which is related to, but differs from the adoption decision itself. Therefore, they are integrated in the next chapter in variables as product quality and social norms.

2.4 Conclusion

When relating the above information to the first research question, *how does a new product come from introduction to adoption in the mind of a consumer,* the following can be stated:

To adopt a new product or innovation, an individual first needs to gain knowledge of the innovation, to be aware of its existence. Next the individual needs to be persuaded by the product and form a favorable attitude towards the innovation. Therefore, he or she actively seeks information about the new idea, decides what messages he or she regards as credible and decides how he or she interprets the information that is received. If he or she decides that the outcome is favorable, he or she engages in activities that result in a decision to adopt the innovation. Then, in implementation the innovation is actually put to use and in the confirmation stage the individual seeks reinforcement for the decision made.

The fact that the attitudes are formed and the buying decision is made in the persuasion stage and decision stage makes these stages critical in the adoption process. If the innovation passes these stages, the product is purchased. An important note in these stages is, that an individual can decide to adopt the innovation in his mind, but does not act upon this adoption. In that case the individual moves out of the innovation decision process after positively assessing the product, so when focusing on these stages a correction must be made for this phenomenon.

3. Consumer Behavior

Section 2.2 underlined the close relationship between adoption and ordinary buying behavior. Now, this chapter focuses on the field of consumer behavior to find out what are important variables for buying a social technology innovation as the ceramic water filter according to theory focused specifically on ceramic water filters or appropriate other products.

Therefore section 3.1. starts by explaining the more general theory of reasoned action as the basis of consumer behavior before focusing specifically on the variables that are of influence on the buying decision of the ceramic water filter in section 3.2.

3.1. Theory of reasoned action

In recent years, numerous researches have been done in trying to explain why people buy, adopt or use certain products (e.g. Albarracin et al., 2001; Helmig et al., 2007; Makatouni, 2002; Muk, 2007; Verhoef, 2005; Xu et al., 2004). These products differed from controversial products like alligator leather (Xu et al., 2004) to health products like organic food (Verhoef, 2005; Makatouni, 2002). However, they all evolve around determining how consumers' attitudes and behavioral intentions are formed and influenced. Multiple theories have been proposed to explain attitude behavior (Xu et al, 2004). Among them one of the most widely adopted and used has been the Fishbein and Ajzen (1975) theory of reasoned action (Robertson et al., 1984) whose validity has been examined and supported in numerous studies that have previously served as the literature for at least three quantitative reviews (Albarracin et al., 2001; Ajzen and Fishbein, 1973; Van den Putte, 1991; Sheppard et al, 1988;)

The theory of reasoned action follows the same the assumption as the innovation decision process of Rogers (2003), that human beings are usually quite rational and make systematic use of the information available to them. The model was explicitly constructed to explain relationships between attitude and behavior by using the variables of belief, attitude, behavioral intention and behavior. Though the ultimate goal is to predict and understand an individual's behavior, the theory focuses on the influences of relevant factors on the behavioral intention and views the intention to perform or not perform a behavior as the immediate determinant of the action.

According to the theory (Ajzen and Fishbein, 1973), a person's behavioral intention is determined by three factors. One is the individual's "attitude toward the behavior" and the other is the person's perception of the social pressures placed on him/her to perform or not perform the behavior in question, referred to as the "subjective norm". The attitude towards the behavior is a function of beliefs that performing the behavior has certain attributes and the evaluation of the beliefs. The subjective norm is a function of an individual's beliefs that specific individuals or groups think he/she should or should not perform the behavior and the individual's motivation to comply with those referents. Later Ajzen and Fishbein (1980) proposed that certain "external variables may affect behavior indirectly by their effect on behavioral beliefs, outcome evaluations, normative beliefs, motivation to comply, or on the relative weights of the attitude and normative components. Figure 3 visualizes the theory.

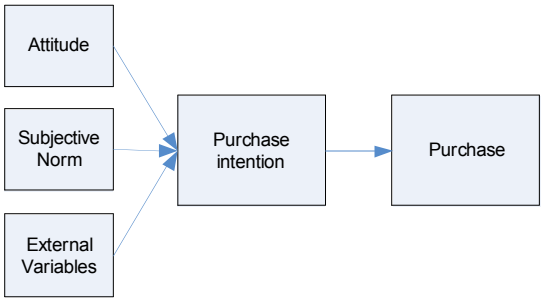


Figure 3: The theory of reasoned action

3.2. Water Filter consumer behavior

As the theory of reasoned action has been widely used for explaining general buying behavior there is extensive literature that can be useful to understand the specific situation of ceramic filter buying / adoption behavior. Especially the field of Organic food might be interesting for this research because of it's potential transferability to the field of ceramic water filters, since it are both food products that can be related to health. (Soil Associotion, 2000; Makatouni, 1999; Latacz-Lohmann and Foster, 1997; Morris, 1996; Davies et al., 1995; Tregear et al., 1994).

Insights of a study of Verhoef (2005) on organic meat buying behavior and a longitudinal study on ceramic water filters of Brown and Sobsey (2007) combined with the theory of reasoned action (Ajzen and Fisbein, 1973) and adoption theory (Rogers, 2003) have led to the following model:

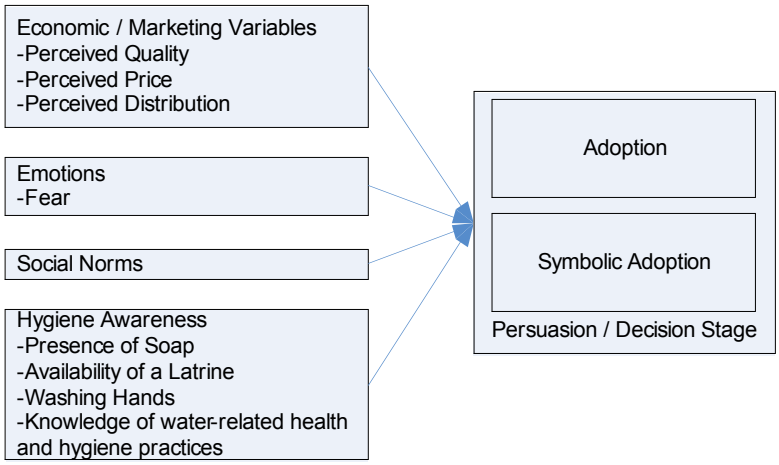


Figure 4: Buying behavior of ceramic water filters

In the remaining of this chapter the dependent and independent variables of this model are explained.

3.2.1. Adoption and Symbolic adoption

Adoption and symbolic adoption are the dependent variables of the model. They represent acceptance of the water filter and the overall goal. As explained in section 3.1. the theory of reasoned action views the intention to perform or not perform a behavior as the immediate determinant of the action. However, in section 2.3.2 we found that

adoption theory recognizes the possibility of a discrepancy between persuasion and decision (Beal et al., 1966; Bohlen, 1968; Rogers, 1968, 2003). Therefore the model focuses both on adoption –usage- and symbolic adoption –non-usage, but favoring the product-. An advantage of this distinction is that this research will be able not only to assess the relative importance of each variable on filter adoption, but also a distinction can be made between variables that influence mostly the idea behind the innovation (persuasion stage) and variables that mostly influence the actual adoption and purchase of the innovation (decision stage).

3.2.2. Economic and marketing variables

The first family of independent variables that is discussed are external variables: the economic and marketing variables. Verhoef (2005) included the economic and marketing variables in his model of organic meat, since he suggests that behaving in an environmentally fashion can be seen as an economic decision based on the consumer's perceived personal costs and rewards. The choice for adopting or buying a ceramic water filter can also be seen as a decision based on the consumer's perceived cost and rewards and marketing and economic literature suggests that price and quality generally are very important in shaping customer behavior (Steenkamp and Van Trijp, 1996). Therefore, the following variables are included in the adoption model.

Quality- Many studies have shown that perceived quality is an important determinant of consumer choice (e.g. Andreassen et al., 1998; Babakus and Yavas, 2008; Bloemer et al., 1998; Chao, 2008; Xu et al, 2008). A higher perceived quality should therefore have a positive effect on ceramic filter adoption and symbolic adoption.

Price- As with quality, the perceived price level is of importance. If the price of a product is perceived to be high, consumers will be less willing to buy the product and will consume less of it (Bolton and Lemon, 1999). Probably the same counts for ceramic water filters, if the price is perceived to be high, consumers will be less willing to buy. Therefore, price perception has a negative influence on ceramic filter adoption and on symbolic adoption.

Distribution- Distribution is about the ease of obtaining a product. Non-availability of a water filter in the village or store that is frequently visited by the consumer increases the transaction costs for consumers wanting to buy (Campo et al., 2000), leading to a lower purchase probability (Verhoef, 2005). This was supported by research of Brown and Sobsey (2007) which indicated that availability of replacement parts and access to or awareness of distribution points may limit the sustainability of ceramic filter intervention efforts. Therefore, perceived distribution of ceramic water filters should positively affect ceramic filter adoption and symbolic adoption.

Since the above variables are more related to the product than to the idea behind the innovation, it is expected that these variables will more strongly influence adoption then symbolic adoption.

3.2.3. Emotions

The second independent family of (external) variables is emotions. Emotions are generally defined as positive or negative affective reactions to perception situations (Verhoef, 2005). Emotions have important implications for behaviour (Plutchnick, 1980). Emotion theorists distinguish between goal-directed emotions and self-conscious emotions. Goal directed emotions may be activated by the prospects of goal success and / or goal failure (e.g. Bagozzi et al., 1998). Self-conscious emotions are natural emotions that provide information about one's own behavior (Kugler and Jones, 1992). Psychologists also distinguish between self oriented and other oriented emotions. Other-oriented emotional responses occur in response to the perceived welfare of someone else (Batson and Coke, 1981). The most prominent other-oriented emotion is empathy. Verhoef (2005) calls fear, guilt and empathy as emotions that affect organic meat buying behavior. However, as guilt and empathy are related to animal and environmental welfare, which are no items in ceramic water filter production, only fear is transferable to water filter buying behavior.

Fear- According to Rogers (1975) fear motivates an organism to escape or avoid a noxious event. Drinking of contaminated water can cause diarrhea, which kills 1.8 million people each year (WHO, 2004). Household-scale ceramic filtration technology is considered among the most promising options for treating drinking water at the household level in developing countries (Lantagne, 2001; Sobsey, 2002; Roberts, 2004). Therefore, fear of health consequences of drinking contaminated water positively affects ceramic filter adoption and symbolic adoption.

3.2.4. Social norms

The third family of independent variables is social norms. Norms in reference groups have been shown to have an important impact on consumer behavior (Asjer and Fishbein, 1973; Childers and Rao, 1992) and adoption (Rogers, 2003). Individuals who comply with norms of their social network can expect to create a good impression or receive praise for their actions, whereas those who do not can expect negative verbal or visual expressions of disappointment (Fischer and Ackerman, 1998). This variable contains the subjective norms of the Asjer and Fishbein model (1973).

3.2.5. Hygiene variables

The last independent group of variables that is included in the model is more specific for the case of ceramic water filters and are believed to shape the attitude towards the behavior. Brown and Sobsey (2007) conducted a longitudinal study among 80 households using a ceramic water filter and a control group of 80 household not using a ceramic water filter. Among other things, they found that access to sanitation and the practice of other water and hygiene-conscious behaviors in the household were important predictors of continued filter use over time. Based on these findings several hygiene variables are added to the model.

Soap- The longitudinal study of Brown and Sobsey (2007) showed that usage of water filters was higher in houses where soap was present, then in houses where no soap

was present. Therefore presence of soap should have a positive effect on ceramic filter adoption and symbolic adoption.

Access to a latrine- Households with access to a latrine are more likely to use a water filter (Brown and Sobsey, 2007). Therefore, access to a latrine should have a positive effect on ceramic filter adoption and symbolic adoption.

Washing hands- Washing hands with soap and water after defecating or before preparing food also showed a positive relation to water usage (Brown and Sobsey, 2007). Therefore, washing hands should have a positive effect on ceramic filter adoption and symbolic adoption.

Water-related health and hygiene knowledge / involvement- The study of Brown and Sobsey (2007) did not clearly show a relation between water-related health and hygiene education and water filter usage. However, observed associations did suggest a relation between filter use and knowledge of household health and hygiene practices. Therefore, this variable is added to the model. Water-related health and hygiene knowledge and involvement should have a positive effect on ceramic filter adoption and symbolic adoption.

3.3. Conclusion

When relating the above information to the second research question, *Why do people buy / use a social technology innovation as the ceramic water filter, what are important variables according to literature,* the following can be stated:

Consumer behavior literature suggests through the theory of reasoned action (Ajzen and Fishbein, 1973), that the behavior to use a product is dependent of an individual's attitude towards the product, of the individual's perception of social pressures towards the product and of external variables.

General marketing theory, organic food literature and earlier studies on ceramic water filter use suggest that economic variables and emotions, social norms and hygiene variables influence ceramic water filter buying behavior. It suggests that quality perception, availability perception, fear for diseases, complying to social norms, usage of soap, access to a latrine, washing hands and water-related health and hygiene knowledge positively effect ceramic water filter adoption and symbolic adoption and that price perception negatively influences adoption and symbolic adoption. It is also expected that the economic / marketing variables will have more influence on adoption then on symbolic adoption.

4. Social Marketing: The Conceptual Model

As stated in the introduction, social marketing is a powerful tool in changing customer behavior (Andreasen, 1995; Kotler and Roberto, 1989; Kotler, Roberto and Lee, 2002). This chapter focuses on the field of social marketing to gain insights on how social marketing can effect the variables that influence the adoption decision of a social technology innovation as the ceramic water filter according to literature.

Therefore section 4.1. first explains some insights on general social marketing before section 4.2. comes with a social marketing framework based on the buying decision of the ceramic water filter.

4.1 Introduction

The principle of Social Marketing originated in the end of the 1960s in work of Kotler and Levy's (1969) and Kotler and Zaltman (1971). It's Roots as a practice go back at leas that far, beginning with family planning applications in the 1960s (Harvey, 1999; Manoff 1975). However, in recent years the field has gained popularity and books, chapters, journals and conferences are currently devoted to the practice of social marketing (Andreasen, 2002). On the practice side signals of growth include World Bank and UNAIDS campaigns, requests for proposals for social change programs by nonprofit organizations and interest by major consulting companies (Andreasen, 2002).

Although social marketing can broadly be seen as the application of marketing principles and exchange to social issues (Domegan, 2008), the definitions of Kotler et al. (2002), Andreasen (2002) and Hastings (2002) are the most widely accepted in modern literature (Domegan, 2008).

Kotler et al. (2002) state: *"Social Marketing is the use of marketing principles and techniques to influence a target audience to voluntarily accept, reject, modify, or abandon a behavior for the benefit of individuals, groups, or society as a whole."*

Andreasen (2002) defines social marketing as *"[..] the application of commercial marketing technologies to the analysis, planning, execution and evaluation of programs designed to influence the voluntary behavior of target audiences in order to improve their personal welfare and that of their society."*

Hastings (2003) states: *"Social Marketing's most fundamental feature is that it takes learning from commerce […] such as consumer orientation, mutually beneficial exchange, the need to focus on behavior change and address the context as well as the individual."*

4.1.1. The social marketing mindset

Social marketing makes use of commercial marketing concepts to change behaviour. Therefore, the social marketing mindset and the commercial marketing mindset or paradigm both follow the same core principle that was defined by Kotler and Keller in 1967: *"All marketing decisions must emanate from a consideration of the target customer"*.

Thinking from the view of the customer is important in social marketing since it is almost always dealing with high-involvement behaviours (Andreason, 1995). These are behaviours on which individuals care a great deal, where they see significant risks, where they think a lot before acting and where they frequently seek the advice of others (Celsi

and Olson, 1988). Therefore, one should not approaching social marketing without careful thinking about the complex motivations involved.

4.1.2. The social marketing product

In the social marketing approach consumers are influenced to change from an adverse idea, or to adopt new ideas (Kotler and Roberto, 1989). The ideas and forthcoming new behaviours are the "products" to be marketed. Therefore, the product can be to solely an idea, but also a practice or a tangible product, that helps to change behaviour. This is shown in figure 5.

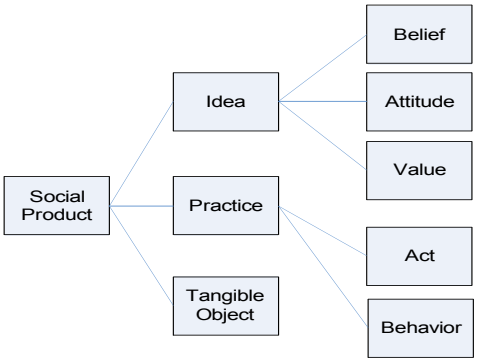


Figure 5: Social marketing product (from Kotler and Roberto, 1989)

Examples of these three products are Human Rights, showing up for vaccination and contraceptive pills in family planning campaigns. The ceramic pot filters fall into the last category of tangible objects.

Social products with tangible objects

The idea behind social marketing campaigns focused on tangible products is, that the main product is not the contraceptive pill, condom, or water filter; these are tools to accomplish a social practice, which is the case of family planning or drinking purified water. The tangible product refers to physical products that may accompany a campaign (Kotler and Roberto, 1989).

Since the marketing concept holds that the key to achieving organizational goals consists in determining the needs and wants of target markets and delivering the desired satisfactions more effectively and efficiently than competitors (Kotler, 1983), the social product needs to meet target market preferences and it need to meet those better then competing products. The degree of product-market fit determines the value to the target adopters of what the social marketer is offering (Kotler and Roberto, 1989). However, reaching a product market fit can take big efforts, since in many cases of social marketing the target market does not perceive a problem (Andreasen, 1995).

Since the tangible product and the social idea differ, the marketing efforts directed to them also differ. the social idea and the tangible social product should be positioned separately to translate the fit of the social product to the social idea and product and all must be dressed up to reinforce the chosen positioning (Kotler and Roberto, 1989). This process of translating the positioning of the social product to it's underlying attributes is illustrated in figure 6.

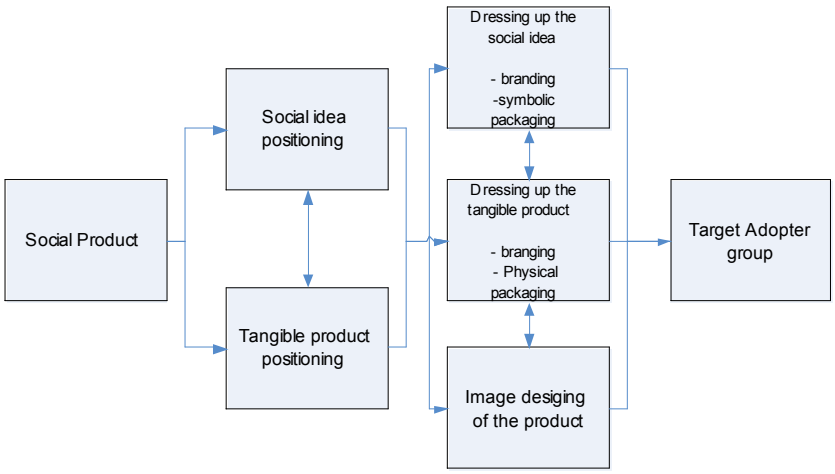


Figure 6: Social products with a tangible product base (Kotler and Roberto, 1989)

4.2. Social Marketing and CWF adoption: a conceptual model

Since it is the aim of social marketing to influence these motivations, one should approach social marketing after careful thinking about the complex motivations involved of the current behaviour and changing that behaviour. This links social marketing to consumer behaviour and to the model of buying behaviour that was constructed in section 3.2.: In chapter three variables that influence the adoption decision of the water filter –the tangible object- were discussed and these variables represent these complex motivations.

In section 4.1.2. as distinction has been made between marketing the tangible product and marketing the social idea. This split up in marketing efforts is useful in determining which marketing efforts influence which variable.

4.2.1. Marketing the tangible product

Marketing the tangible product of a social idea pretty much resembles the marketing of an ordinary product. Based on internal and external analysis a strategy is chosen to position the product and the marketing mix of product, price, place and promotion is set accordingly.

Relating this to the model of buying behaviour of section 3.2. one can say that the marketing of the tangible product is included in the model. The economic / marketing variables represent product (quality), price, place (distribution). This suggests a strong influence of marketing focused on the product on these variables.

4.2.2. Marketing the social idea

Marketing the social idea in the case of the water filter is about marketing usage of non-contaminated water. Therefore, it uses aspects from the education , persuasion, behavioural modification and social influence approach (Andreasen, 1995; Hornik, 1992). Efforts are made to educate individuals on hygiene and health (education, behavioural modification approach), individuals are warned for the relations between contaminated water and child mortality (persuasion approach) and aim to influence communities (social influence approach).

These efforts can also be related to the model of consumer behaviour of section 3.2. since one might expect that they influence the more softer variables: emotions, social norms and hygiene attitude.

4.2.3 The conceptual model and hypotheses

In the preceding sections several links between marketing, consumer behaviour and adoption were explained. The conceptual model in figure 7 brings together these links and visualizes how social marketing can influence adoption according to theory.

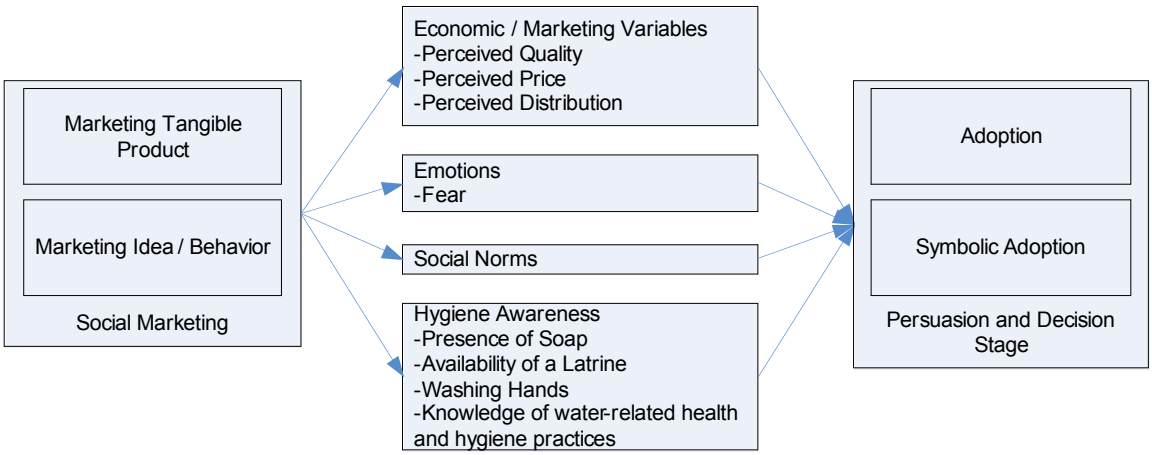


Figure 7: Conceptual model

Based on the previous chapters of this part of the research, the following hypotheses are formulated regarding the conceptual model:

H_1:	Marketing the tangible product leads to more positive evaluations of the economic / marketing variables.
H_2:	Marketing the idea / behavior leads to more positive evaluations of emotions, more importance of social norms and a more advanced level of hygiene awareness
H_3:	Economic marketing variables, Emotions, the importance of Social norms and the level of the Hygiene awareness all have a positive influence on adoption and Symbolic adoption.

4.3. Conclusion

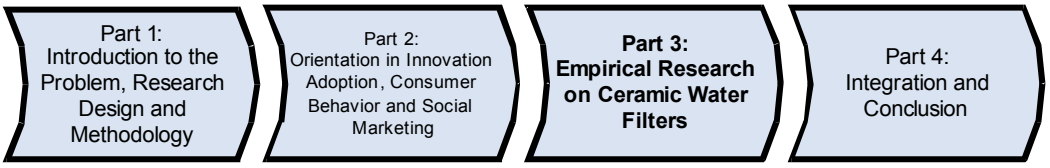
When relating the above information to the third research question, *how does Social marketing effect the variables that influence the adoption decision of a social technology innovation as the ceramic water filter according to literature,* the following can be stated based on theory:

Social marketing entails two marketing efforts: marketing the tangible product and marketing the social marketing idea. Marketing of the tangible product entails setting the marketing mix of product, price, place and promotion and therefore, directly

influences the economic and marketing variables that influence the adoption decision. Marketing the social marketing idea entails educating, persuading and influencing individuals and communities and therefore directly influences emotions, hygiene variables and social norms that influence the adoption decision.

Based on these insights, it is expected that marketing the tangible product leads to more positive evaluations of the economic / marketing variables. That marketing the idea / behavior leads to more positive evaluations of emotions, more importance of social norms and a more advanced level of hygiene awareness and that economic marketing variables, Emotions, the importance of Social norms and the level of the Hygiene awareness all have a positive influence on adoption and Symbolic adoption.

Part 3: Empirical Research on Ceramic Water Filters



5. Research Methods

This first chapter of part 3 starts with explaining the research methods used in this research. Therefore, section 5.1 first focuses on the sources and techniques used in this research. Section 5.2. then focuses on the collection information of past marketing activities, before section 5.3. focuses on the collection of a sample and data for the market survey. Section 5.4. then focuses on the measurement of the consumer behavior variables that were included in the conceptual model, before the chapter ends with an overview that links all data collection techniques and sources to the research questions.

5.1. Data Collection

As explained in Chapter one, this research follows a dyadic approach that links linking qualitative insights on marketing activities to a quantitative analysis of why individuals adopt the ceramic water filter. To obtain these insights and perform the analysis data is obtained from several sources using several techniques.

5.1.1 Sources of this research

This research makes use of three different sources, which are all primary sources. Using several sources to come to the same conclusion helps diminishing the presence of coincidence in the research. The following sources are used in this research to obtain data and knowledge:

1. *Literature*;
2. *Documents*;
3. *Persons*;

Where literature has formed the basis of the part two of this research, documents and persons serve as the primary sources for part three; the empirical research.

5.1.2. Research techniques

To obtain the information needed from the sources, multiple techniques are used in this empirical research:

1. Documents
    a. *Desk Research*;
2. Persons
    a. *Interview*;
    b. *Survey*;
    c. *Observation*

The remaining of this chapter will explain in greater detail how the research was set up.

5.2. Marketing efforts and success

To gain insights on past marketing activities and their perceived success, semi-structured face-to-face interviews are held with marketing managers / coordinators and country directors of two different NGO's that produce and sell the CWF in Cambodia: Resource Development International Cambodia (RDI) and International Development

Enterprises (IDE). These interviews served two goals; first information is obtained regarding (social) marketing activities related to the conceptual model to find two appropriate districts for the survey; what activities were focused on the tangible product and what activities were focused on the social marketing idea. Second, additional information is obtained for a field note that the researcher writes in addition to this research relating to marketing activities for water filters.

The questions focus on marketing budget, the marketing mix, the marketing activities, perception of marketing results, etc. Also, marketing communication documents are analyzed, to understand their focus. The aim is to find out what marketing efforts have been conducted in the past and for what reasons. A checklist used to guide the interviews can be found in appendix 1.

5.3. Survey data collection

To obtain information from current and potential adopters targeted by different marketing approaches to test the conceptual model that is constructed in part 2, a survey is held in two districts in two different provinces, which were targeted in the years before by RDI and IDE through different marketing strategies. The households in the survey are users and non-users of ceramic water filters made by RDI and IDE. To reach these individuals a questionnaire is constructed in English, which is translated into Khmer. Then the questionnaire is translated back from Khmer to English by another translator, making it possible to assess differences between the Khmer and English version. Finally, the Khmer questionnaire is pre-tested on several locals in Phnom Penh. The survey uses simple straightforward language with closed multiple-choice questions.

5.3.1. Process

To collect the data, the researcher was advised to hire local people to conduct the survey to overcome language barriers and decrease bias. It showed that some of the villages in the provinces were not used to be visited by western people and would be to influenced to answer truthful questions. Therefore, interviewers were hired with backgrounds as university students, health center workers and in filter production.

To get valid results from all surveyors, they all received a day of training. To make sure all surveyors would interpret the questions in the same way, all trainings were given by the same trainers: the researcher and the main translator. The training also included insights on how the surveyors should conduct observation on family wealth.

The interviewers were instructed to aim questions at the household's primary caregiver, the one that performs most cooking and uses most water. Although this individual is not the actual decision maker in the adoption process per se, he / she is expected to be a strong influencer. It is expected that the primary caregiver usually is the female member of the family.

After the training, the research team existing of surveyors, a translator and the researcher visited the selected villages by motorbike to perform the interviews. During the interviews, the surveyor asks questions and fills out the questionnaire based on the answers given.

5.3.2. Sample

The two provinces or districts out of which the sample was obtained were suggested as appropriate by IDE or RDI and selected on the marketing approach used for these area's. Each province was targeted by either a focus on the tangible product or on the social idea. The first province that was included in the research was Kompong Cham Province, where the research team drove through Highway nr 7 and took surveys around this highway near the regional market of Kandol Chram where the filter was sold. The second province visited was Kandal Province, where the research drove through several villages where the filter was sold house-to-house.

To obtain an appropriate sample to test the conceptual model and answer the research questions on both the difference in marketing approach and the difference between users and non-users, the researcher used the non-probability sampling technique of quota sampling. This way, the sample was to include 25% adopters and 25 % non-adopters of the ceramic water filter in Kompong Cham Province and 25% adopters and 25% non-adopters of the ceramic water filter in Kandal Province. The total sample size was initially planned to be around 100 households, but through efficient work, the surveyors managed to interview 155 households in stead. However, of the 155 interviews 26 did not fit the needed characteristics that were defined in terms of marketing approach and have been excluded.

Therefore, the sample includes 129 households, of which 64 (49,6 %) users and 65 (50,4 %) non-users. Furthermore, 74 (57,4 %) households were interviewed from Kompong Cham Province of which 41 (55,4 %) users and 55 (42,6 %) households were interviewed from Kandal Province of which 23 (41 %) users.

5.3.2. Questionnaire

The questionnaire used in the research contained 42 questions covering all research variables. The questionnaire starts with a section on personal information and general water usage to gain understanding of the circumstances in which the family uses it's water. Then, questions focus on the ceramic water filter and the purchase decision. The following four sections focus specifically on the consumer behavior variables and the questionnaire ends with a focus on the hygiene variables and control variables.

Most questions follow ordinal likert-scales measuring the research variables, but the questionnaire also contains nominal and ratio scales to measure general information, filter price etc. Section 5.4 focuses on all measurement scales in greater detail and the total questionnaire can be found in appendix 2 (English) and 3 (Khmer).

5.4. Measurement of variables

To be consistent with previous research, a literature search was done to find measurement-scales that could be used in this study to measure the dependent and independent variables. Starting points of this search were the articles of Verhoef (2005) and Brown and Sobsey (2007) that also served as starting points in the conceptual model. As this study focuses on a particular product with its own typical characteristics –the ceramic water filter-, some measurements from literature had to be adapted. Others could be included directly in this study. To analyze the reliability of each scale in the case of

the ceramic water filters, reliability analysis and factor analysis were executed for each scale to determine their validity in this research.

An overview of the scales can be found at the end of this paragraph in table 1.

5.4.1. Measurement of adoption and symbolic adoption

To measure symbolic adoption, the respondent is asked if he believes the water filter is a good, useful product, with four response categories: (1) not at al, (2) maybe a bit, (3) reasonable, (4) very useful. To measure adoption we ask if the individual owns a water filter and ask if we can see it to observe if it is in current use. Based on earlier research (Brown and Sobsey, 2007) criteria for current use are that the filter (i) was in good working order (filter element, tap, and receptacle intact and apparently functional) and (ii), that it contained water or was damp from recent use.

5.4.2. Measurement of marketing / economic variables

To measure the perceived quality of the ceramic water filter, this study follows the approach of Verhoef (2005) and Korgaonkar and Moschis (1982), where perceived quality is measured as an outcome of the comparison of attributes of filtered water with other water. The attributes that are included come from the Consumer Perception Study that was conducted in Nepal to assess appraisal of various water purifying techniques (AED, 2006).

The factor analysis of the quality variables delivers three components for quality, that only differ a bit from theory. The first component consists of the assessed quality of filtered water opposed to non-purified or chemically treated water in terms of appearance (color, smell, taste). The second component consists of the respondents assessment of quality of filtered water opposed to boiled water and the third component consist the assessment of higher values as quality in terms of health and acceptability to family members between filtered water and non purified or chemically treated water. However, the factor values cannot be used since although the KMO (0,812) and Bartlett's (0,00) values are good, the communalities of the variables are mostly below the needed level of 0,7.

However in the reliability analysis, the scales of quality of filtered water as perceived by users and non users of the filter (quality of filtered water over non-purified water, quality of filtered water over cooked water and the quality of filtered water over chemically treated water) all alpha's are above 0,8 (0,826; 0,912; 0,822), with all constructs with corrected item total correlations all above 0,3. Which does prove the reliability and usability of these scales in quality. When assessing the reliability of the whole scale of perceived quality two variables (17.CWFtemp, 19.CWFtemp) do have a corrected item total correlation of below 0,3 (0,131; 0,040) and have to be excluded. This brings the alpha of the scale for total perceived quality on 0,826 and well above the recommended level of 0,6 (Malhotra, 2006).

The perceived price level of the ceramic water filter is measured by asking three questions about the price that are based on the research of Verhoef (2005) and Bolton and Lemon (1999). Apart from general associations of the price, this research also measures whether the current price is a barrier for purchase. Also, respondents are asked what they think is a fair price for the filter.

The factor analysis led –as expected- to one component for the price variable, however after the question of barrier to purchase is excluded. The KMO value of sampling adequacy reaches 0,5 which is on the brink of being acceptable according to Kaiser (1974), who recommends values >0,5. The Bartlett's test reaches a value <0,001, making a factor analysis appropriate. Finally, all communalities after extraction are >0,7, thus making the factor analysis appropriate (Kaiser, 1975)

Also when assessing the scale for perceived price in the reliability analysis we come to an alpha of 0,606, which, again, is above the recommended level of 0,6.

To measure perceived distribution, this research focuses on two variables that are adapted from Verhoef (2005). First, we asses whether there are sufficient stores in the village or neighborhood and secondly whether stores are easily reached.

A factor analysis on the variables of distribution delivers one component, as one expects. The KMO value of 0,5 is again on the brink of being acceptable according to Kaiser (1975), the Bartlett's test reaches a value >0,001 and all communalities after extraction are >0,7. The Cronbach Alpha from the reliability analysis also causes no problems with a value of 0,828 well being above the recommended level of 0,6 (Malhotra, 2006).

5.4.3. Measurement of emotions

The measurement of emotions is a difficult exercise (Verhoef, 2005). Although the water filter is seen as a high involvement product, the emotions involved might not be present when completing the questionnaire, because they only occur in a specific behavioral context. By first describing particular hypothetical situations and then asking the respondent to rate their emotions on a seven-point scale helps overcoming the difficulty of measuring emotions (Richins, 1997). However, since a large group of adult Cambodian people has not received any education during their youth the scale was kept at a 5 scale to keep answering simpler. Also, the original three questions on the feelings scared, afraid and worried were brought back to one question, since according to the translators these feelings are all named the same in Khmer and deferring would be confusing.

5.4.4. Measurement of social norms

Following previous research, social norms are measured focused on three different types of influence, informational influence, utilitarian influence and value-expressive influence. Park and Lessig (1977) developed the first useful measure to this construct. For this research, several newer scales (Bearden et al 1989, 1990; Kahle, 1995) were investigated, that have their foundations in the old measurement scale of Park and Lessig (1977). However, the original scale seems better suitable for the purpose of this research, since it is more focused on an actual product.

A factor analysis of social norms delivers two components: one consisting of the informational and value expressive variables and one consisting of the utilitarian values. The KMO and Bartlett's value are with 0,796 and 0,00 acceptable. However, 5 of 9 communalities are below 0,7 (See appendix 4 for details), causing the outcome to fail the Kaiser criterion (1975).

In the reliability analysis, the first variable "informational norms" reaches an alpha of 0,657 after excluding one non-suitable question (23.infnorm3) from the scale. From the scale of the "utilitarian norms" we also need to exclude one question (28.utilnorm3) to reach an alpha of 0,718. the scale of "value expressive norms" causes no problems and reaches an alpha of 0,856. The remaining 10-item scale measuring social norms then reaches an alpha well above 0,7 (0,862) and is therefore suitable to use.

5.4.5. Measurement of hygiene variables

Relating to hygiene variables, the study of Brown and Sobsey (2007) that showed a link between hygiene variables and continued usage gives important input on obtaining data. Since the conceptual model includes hygiene variables based on the conclusions of Brown and Sobsey (2007), the researcher approached them to obtain their questionnaire regarding hygiene variables. That way, several questionnaires were obtained that served as a reverence for assessing hygiene variables leading to 7 questions relating to hygiene.

However, these 7 questions measuring hygiene do not seem suitable for use in one scale in this research and may better be assessed individually. Only three questions about health involvement reach a joint alpha of 0,693 and are suitable as a scale in this research. In the factor analysis, all have significant values below 0,05 and correlation values below 0,9. The KMO and Bartlett's value are with 0,631 and 0,00 acceptable but two of three communalities are below 0,7 causing the outcome to fail the Kaiser criterion (1975) (See appendix 5 for details.

The questions about presence of soap, the presence of a latrine and the frequency of washing hands need to be assessed individually.

Construct	Sources	Operationalization	Alpha
Economic and marketing variables			
perceived quality	Verhoef, 2005; AED, 2006	A 16-item scale that measures how indivduals rate attributes of filtered water compared to other water	0,826
perceived cost	Verhoef, 2005; Bolton and Lemon, 1999	A 2-item scale that measures the current perceived pricelevel and whether price is a barrier for purchasing the product	0,606
perceived distrubution	Verhoef, 2005	A 2-item scale that measures whether there are suffiecient stores and if they are easy to reach.	0,828
Emotions			
Fear	Verhoef, 2005; Richins, 1997	A 1-item scale that measures fear by first describing a particular hypothetical situation and then asking the respondent to rate their emotions	
Norms			
Informational influence	Park and lessig, 1977	A 3-item scale that measures the extent to which individuals use professionals or their peers for obtaining information about a new product	0,657
Utilitarian influence	Park and lessig, 1977	A 3-item scale that measures the extent to which indidivuals are sensitive to imitating peers in product choices	0,718

Table 1: Measures used in the study

5.5. Control variables

To broaden the understanding that this research aims to create, several control variables are added to the survey questionnaire. These variables are aimed at gender, age, household size, children's age, education, and wealth. Also water usage and water source are measured to interpret the descriptive findings on filter adoption. The control variables are then tested for their direct effect on adoption and symbolic adoption. Based on the research of Brown and Sobsey (2007) wealth is measured in two ways: the presence of electricity and the size and current state of a home, which is assessed by observation.

Furthermore, since the water filters are sold with different levels of monetary support of NGO's, the actual price paid by the household is an important variable to link to perceived price.

5.6. Overview

Now all methodology has been explained, this chapter ends with an overview. The following table shows how the different sources and techniques come together with the research design and research questions.

Methodology vs Part	2				3		4
Methodology vs. Question	**1**	**2**	**3**	**4**	**5**	**6**	**Main**
Persons:							
survey						x	x
Interview					x		x
Documents:							
Content analysis					x		x
Literature:							
Search registers	x	x	x	x			x
Snowball principle	x	x	x	x			x

Table 2: Methodology vs. Questions

6. Analysis

This last chapter of part 3 builds around the actual analysis and aims to find empirical insights on what important variables are on why people buy a social technology innovation as the ceramic water filter and on how social marketing effects these variables. Therefore, section 6.1. starts with explaining the sample characteristics and how the selected area's were approached in previous years by water filter marketing campaigns. Section 6.2. then starts the analysis of the influence of the different marketing techniques on the consumer's perception of the product's consumer behavior variables, before section 6.3 analyzes the relation between these variables and symbolic and actual adoption.

6.1. Sample Characteristics

6.1.1. Marketing approach to sample

To determine the how marketing influences the adoption of the ceramic water filter the marketing approach differed in both areas included in the sample, with one approach being more commercial with a strong focus on marketing the actual product and the other approached more focused on marketing the social idea / habit with help and education. This section only explains the difference in marketing approach, later in the analysis the effects of these approaches will be explained.

Kompong Cham province-

In Kompong Cham Province the filters were sold in a commercial way through a local channel. The filters, produced by the NGO, are sold to a private distributor for a cost price including material, wages, energy, etc. The distributor then sells them to a retailer located on a provincial market for a price covering transportation cost and about $1 profit margin. The retailer then also ads a profit margin and the filters are sold for around $12 covering all expenses and covering an income for both a distributor and a retailer.

In terms of promotion, commercials on local radio stations have been played in this area and demonstrations where held on the market to raise awareness and to communicate the advantages of the product. Also, the local health centre endorses the filter and visitors of the health centre can sample water from the filter. Lastly, big signs are standing next to the highway promoting the filter and pinpointing where the filter can be bought. The costs for these promotional activities have been paid for by donor funds of the NGO and, therefore, were not included in the filter price.

In terms of social marketing this means that there is a strong focus on marketing the tangible product, the filter. Potential customers are taught about health risks concerning drinking water through the health centre and there is some attention on this matter in commercials, however, most of the attention is aimed at the product; how it works, where it can be bought, etc.

Kandal Province-

In the villages that were visited in Kandal Province the filter was sold in a subsidized way using donor funds of the NGO. Although the cost price of the filter is

about the same as in Kompong Cham Province, the NGO managed to sell the filter in some villages for $2,5.

These villages were visited by the NGO with a promotion truck explaining about water and sanitation, thus focusing on the social idea / habit. The information also covered the risk of arsenic in well water and promoting the use of rainwater. As part of the campaign the schools of the villages received large rainwater harvesting tanks and ceramic water filters to get acquainted with the product. And teachers of the school received a free filter to become influencers for potential filter buyers.

The filters were sold from the truck to almost each villager reaching quick adoption. In some of the villages, the NGO also sold subsidized rainwater harvesting tanks in the same campaign.

In terms of social marketing there is a strong focus on marketing the idea and behaviour of drinking clean, purified drinking water. Teaching the villagers about the health risks and the need for behavioural change was the main goal of this campaign. Although the filters are marketed and sold at the village's visit, there is not much sustainable attention marketing the tangible product; the focus is on selling it now.

6.1.3. Demographics and water usage in both provinces

The samples reached in Kompong Cham and Kandal Province differ a little in terms of demographics as shown in table 3.

Although not all sample characteristics can be compared with national data, it seems that the sample contains more female and elderly respondents. This is explainable by the fact that the focus was to reach female respondents and the fact that older people are more often at home during the day / at the time the survey was held.

Also it is interesting to see that, although the respondents in Kompong Cham Province are observed as more wealthy, a smaller amount of them have electricity. This is probably explainable with the fact that the district in Kandal Province is closer to the Nation's capital Phnom Penh than the district that was visited in Kompong Cham, which was more remote. Therefore, the impression of wealth is probably a better indicator of wealth in the remaining of this research.

	Kompong Cham	Kandal	Nation wide (CIA Factbook)
% Male / % Female	7% / 93%	26% / 74%	48,9% / 51,1
age: range / median	23-67 / 40	15-72 / 48	..-.. / 21,7
% married	85%	70%	
% children	100%	98,20%	
Age Childeren: 0-10 / 11-18 / 18+	43% / 28% / 28%	26% / 35% / 38%	
% no education / (% elementary school / % elementary +)	24% / 50% / 26%	18% / (50% / 32%)	26,4% / (73,6%)
% home owners	96%	95%	
% electricity	73%	90%	
Impression of state of home and wealth: % Below average / % average / % above average	7% / 43% / 50%	22% / 69% / 9%	

Table 3: demographics sample

About water usage we see there are different reasons for filtering the water in both provinces as shown in table 4. The survey was held in October and November at the end of rainy season, and all respondents in both provinces were using rainwater, well water,

or a combination at the time of the survey. So, although there is no specific data on water quality in the visited districts, both groups are using the same sources and should therefore use water of similar quality.

It is interesting to see that in Kandal Province there is more focus on removing bacteria and preventing sickness, whereas in Kompong Cham no respondents named preventing sickness as a reason for purifying water.

	Kompong Cham	Kandal
% purifies all or most water	100%	80%
Reasons:		
Removing dirt	48%	100%
removing feces	36%	31%
removing bacteria	13%	36%
because of smell	1%	9%
removing insects		7%
preventing sickness		22%
improving taste		10%

Table 4: Reasons for purifying water (more than one answer possible)

6.2. Marketing the social idea vs. Marketing the facilitating product

To assess the left part of the conceptual model, the influence of the marketing strategy on the attitude of the consumer towards the ceramic water filter, independent sample t-tests were conducted to see if both strategies lead to significant differences in the variables that, according to part 2, set the consumer attitude.

6.2.1. The differences between marketing the social idea and marketing the facilitating product

When analyzing the level of economic / marketing variables, emotion, social norms and hygiene variables obtained through the different strategies. Independent-Samples T-tests lead to significant differences in several variables as shown in the summary in table 5.

Related to the economic / marketing variables, we can therefore conclude that consumers that are approached only in the commercial strategy perceive the price of the ceramic water filter ($12) as significantly higher than people that were approached through the more social strategy (Mean diff 0,54; sig < 0,05). The distribution of the filter is experienced as significantly better through the commercial strategy (mean diff 1,0; sig < 0,01). Also, the quality of filtered water is perceived as significantly better (mean diff 0,35; sig < 0,01) through the commercial strategy. This is caused since respondents from Kompong Cham were significantly more positive about filtered water in the comparison between between filtered and untreated water (mean diff 0,678; sig < 0,01) and the comparison between filtered water and chemically treated water (mean diff 0,579; sig < 0,01). The two strategies do not lead to any significant difference in the comparison between filtered and boiled water (mean diff 0,107; sig > 0,1)

Also, there is no significant difference found in emotions experienced when drinking unpurified water, so we can not conclude that one strategy leads to higher experience of emotions (mean diff 0,31; sig > 0,1).

The social norms also significantly differ between the two strategies (mean diff 0,454; sig < 0,01) where respondents approached by the more commercial strategy were less influenced by social norms than respondents in approached in the more social strategy. This was caused by significant differences in all constructs; informational norms (mean diff 0,58; sig < 0,01), utilitarian norms (mean diff 1,271; sig < 0,01) and in value expressive norms (mean diff 0,926; sig < 0,01).

Relating to the hygiene variables, there are no significant differences in the hygiene construct that came out of the reliability and factor analysis (mean diff 0,03; sig > 0,1). However, four other variables do differ between the two groups of respondents: the respondents from Kompong Cham have significantly worse toilet facilities (mean diff 0,358; sig < 0,05); They significantly wash there hands more often (mean diff 0,238; sig < 0,05); but had significantly less often soap present in there home at the time of the interview (mean diff 0,119; sig < 0,05).

			conclusion	
	t-value	Mean difference	tangible product focus	social idea / habit focused
Perceived Price	3,147**	0,54	Higher	Lower
Perceived Distribution	6,625***	1,00	Better	Worse
Perceived quality	4,16***	0,35	Higher	Lower
Perceived quality vs non	8,957***	0,68	Higher	Lower
Perceived quality vs boil	0,672	0,11	Non-significant	Non-significant
Perceived quality vs chem	6,758***	0,58	Higher	Lower
Emotion (experienced fear)	1,54	0,31	Non-significant	Non-significant
Social norms	6,421***	0,45	Less influence	More influence
Informational norms	4,101***	0,58	Less influence	More influence
Utilitarian norms	10,627***	1,27	Less influence	More influence
Value expressive norms	6,906***	0,93	Less influence	More influence
Hygiene attention	0,207	0,03	Non-significant	Non-significant
Toilet facilities	2,247**	0,36	Higher standard	Lower standard
Washing hands	2,586**	0,33	More often	Less often
Soap present in house	2,675**	0,12	Less often	More often

(* p < 0,10; ** p < 0,05; *** p < 0,01)

Table 5: Influence of strategies

The above results are based on the total samples that were obtained in Kompong Cham and Kandal province. When specific groups are selected in a matched t-test to test the influence of a specific approach, the results on the variables perceived distribution, perceived quality vs. untreated water, perceived quality vs. boiled water, emotion and the social norms are always in line with the analyses of the total group. The other variables like perceived price, perceived total quality and the hygiene variables sometimes lose significance through higher wealth or older children. However, the small number of individuals that are included in these selected groups makes them unsuitable for drawing any hard conclusions. Therefore, this research continues based only on the data and analysis of the total group, but the outcomes of the matched t-tests can be found in appendix 4 to gain extra managerial information.

6.2.2. Summary of results

As shown in table 5, the more commercial and product focused strategy that was used in Kompong Cham leads to generally better economic and marketing values, which is expectable with a stronger focus on the marketing of the tangible product. However it is remarkable that the more socially approached group in Kandal perceives the price as lower since they have initially paid less for the filter.

The emotions regarding usage of non-purified water is non-significant for both strategies, suggesting that both strategies do not differ in the way they influence this variable.

The social norms become more important under the marketing strategy with more focus on changing behavior, with especially strong influence of utilitarian norms (mean diff 1,271; sig 0,00) and value expressive norms (mean diff 0,926; sig 0,00) suggesting that these respondents were more led by preferences of their friends and relatives and felt better about themselves after buying the filter.

The results in the hygiene variables differ in results between the two strategies causing an overall non-significant result in the hygiene variables.

6.3 Explaining Adoption

In this paragraph the right half of the conceptual model is assessed; the way the consumer behavior variables influence adoption and symbolic adoption.

6.3.1. Explaining Symbolic Adoption

To assess the influence of the consumer behavior variables and control variables in the conceptual model a linear regression analysis is executed to link the economic / marketing variables, emotion, the social norms and the hygiene variables to the ordinal construct of symbolic adoption.

The outcome delivered an R Square value of 0,352, meaning that the variables can account for 35,2 % of the variation in symbolic adoption. This means there are other factors that influence adoption, but the conceptual model explains already 35,2 %. The Analysis of variance delivers an F-ratio of 2,108 with a significance of 0,019, explaining that the regression model explains symbolic adoption significantly well ($p < 0,05$).

Although not all individual variables proved to have a strong or significant effect on symbolic adoptions, it is interesting to see that social norms (B: 0,85) has the strongest influence, followed by washing hands (B: -0,655) and perceived quality (B: 0,452) all with a significance of < 0,05. With less significance ($p < 0,1$) toilet facilities (B: 0,261) and perceived price (B: 0,217) also have some influence on symbolic adoption. This means that the more people have discussed the filter with their friend and relatives, the better they think of the quality and price and the more they are already involved in hygiene, the better they think of the water filter. An assessment of all individual coefficients of the regression analysis is shown in table 6.

Model	Unstandardized Coefficients		Standardized Coefficients	t
	B	Std. Error	Beta	
(Constant)	-1,025	1,41		-0,727
Perceived Quality	0,452	0,245	0,211	1,844**
Perceived Price	-0,217	0,12	-0,239	-1,742*
Perceived Distrbution	-0,027	0,131	0,029	0,206
Emotion	0,047	0,135	0,055	0,351
Social Norms	0,85	0,341	0,393	2,495**
Hygiene awareness	0,218	0,186	0,156	1,172
Handwash	-0,655	0,294	-0,308	-2,226**
Soap	0,268	0,398	0,077	0,674
Toilet	-0,261	0,133	-0,247	-1,961*
Sex	0,509	0,346	0,205	1,47
Age	-0,013	0,014	-0,157	-0,916
Age children	-0,099	0,166	-0,089	-0,595
Househouldsize	0,005	0,044	0,013	0,11
Impression wealth	0,134	0,165	0,099	0,814
Electricity	-0,211	0,328	-0,076	-0,643

(* $p < 0,10$; ** $p < 0,05$; *** $p < 0,01$)

Table 6: Coefficients symbolic adoption

6.3.2. Explaining Actual Adoption

Since the value of actual adoption in this research comes in a binary value (Do you have a ceramic water filter? Yes / No) it was not possible to conduct a linear regression analysis as with symbolic adoption. Also, since in the Kandal province almost all inhabitants of the villages visited had bought a filter during the campaign no matter if they were currently still using or not using the filter, and have paid a subsidized price, their data could blur outcomes of an analysis. Therefore, it was decided to conduct the analysis of explaining actual adoption only on the Kompong Cham population, since all users in that province were continues users and non-users had never used the filter and all have paid the unsubsidized price. The method used was again an independent samples T-test to see how the one group (users) differed in their answers on the explaining variables from the other group (non-users).

Although the outcome of the t-test shows less information than the linear regression analysis that could be used explaining symbolic adoption, table 7 shows clearly how perceived quality, perceived distribution and how often household members wash their hands significantly differ between adopters and non-adopters of the ceramic water filter. Also with less significance there is a relation between adoption and the toilet facilities of the respondent. This means that users think better of the quality of the filter, think it is easier to find a selling point and more often wash their hands and have more often already invested in hygiene.

For the control variables there was a significant result ($p < 0,05$) relating electricity to adoption. This also suggests a relation between wealth and adoption.

	t	df	Mean difference
Perceived quality	2,383**	57	0,26449
Perceived price	0,121	72	0,02965
Percieved distribution	2,977***	52	0,61932
Emotion	1,389	72	0,26912
Social Norms	0,135	54	0,0136
Hygiene awareness	-0,878	72	-0,13186
Handwash	-2,393**	37	-0,21742
Soap	-1,639	53	-0,13712
Toilet	1,674*	61	0,41667
Sex	1,253	63	0,07059
Age	-1,51	72	-3,48382
Age children	-0,848	72	-0,16618
Househouldsize	1,093	72	0,76471
Impression wealth	0,262	72	0,03824
Electricity	-3,119**	56	-0,31618

(* p < 0,10; ** p < 0,05; *** p < 0,01)

Table 7: t-test adoption

6.4. Conclusion

To end the empirical part of this research the results of the analysis can now be linked to the second and the third research question to answer them from an empirical view:

Why do people buy / use a social technology innovation as the ceramic water filter, what are important variables?

Symbolic adoption for the water filter shows to be related to social norms perceived quality, perceived price and some of the hygiene variables. Therefore one can say that people that think better of the filter in terms of quality and price, discuss the filter with family and friends, more often wash their hands and have already invested hygiene, tend to be stronger symbolic adopters of the filter.

Furthermore, the analysis shows that respondents that have bought the ceramic water filter more often: think better of the quality of the filter, think it is easier to find a store where they can buy the filter, wash their hands and have already invested in hygiene. Also one of the wealth indicators, the presence of electricity, showed to have a link to filter adoption.

These results suggest that people that think better of the filter in terms of quality and distribution and value hygiene more than other people of their community tend to buy the filter more often than others.

How does Social marketing affect the variables that influence the adoption decision of a social technology innovation as the ceramic water filter?

Social marketing approach combines a marketing approach focusing on changing a habit or behavior with a marketing approach focusing on the product that must help to facilitate this change. The analysis shows that a stronger focus on changing behavior, leads to stronger social norms on buying the filter; villagers are discussing the product

with each other, urge each other to buy the product and think better of themselves when buying the product. Also this focus helps in downwards adjusting the perceived price. A stronger focus on the facilitating product showed better results in perceived quality and perceived distribution.

These results are only partially in line with the three hypothesis that were formulated in chapter four, as shown in table 8.

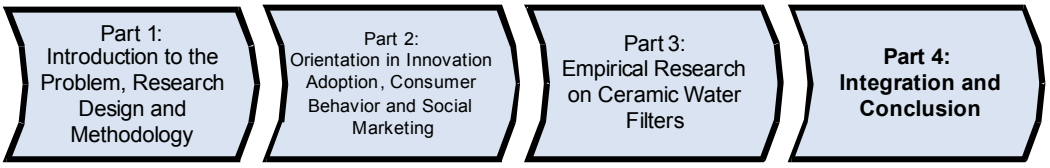
Marketing the tangible produ		**Marketing the social idea**		**variable**	**symbolic adoption**		**actual adoption**	
Hypothesis 1	Empirical result	Hypothesis 2	Empirical result		Hypothesis 3	Empirical result	Hypothesis 3	Empirical result
x				**Marketing / economi**	x		x	
x	*			**Perceived quality**	x	*	x	*
x			*	**Perceived price**	x	*	x	
x	*			**Perceived Distribution**	x		x	*
		x		**Emotion**	x		x	
		x	*	**Social Norms**	x	*	x	
		x		**Hygine variables**	x		x	
		x		**Hygiene Awareness**	x		x	

(x = expected relation; * = found relation)

Table 8 : hypothesis and empirical results.

However, the empirical results alone do not explain everything about how social marketing can influence adoption yet. Therefore, the background of these results and how they can be linked to each other and to theory will form the basis for the next and last part of this research: the integration and conclusion.

Part 4: Integration and conclusion



7. From social marketing to adoption.

The research questions are now answered based on theory and empirical results. In this chapter we discuss those answers to combine insights of both backgrounds and come to an answer to the main research question:

How can social marketing influence the adoption decision of Ceramic Water Filters in less developed countries?

Therefore, section 7.1 first focuses on answering the first research sub-question on innovation adoption, before 7.2 focuses on the second research-subquestion on what consumer behavior variables influence the decision to adopt. Section 7.3 then relates to the third research sub-question by explaining the influence of social marketing on these variables before the main question is answered in section 7.4.

7.1. Adoption

The first section of this research focuses on the first sub-question, *How does a new product come from introduction to adoption in the mind of a consumer?*

7.1.1. Results

Although this chapter is about linking the theoretical based results with the empirical results, this question remains only to be answered based on theory in this research. This research therefore focuses on the innovation decision process of Roberts (2003) and especially on the persuasion and decision stage since those are the stages in which the first adoption decision is made.

The theory of reasoned action that is underlying the innovation decision process explains that once an individual is enough convinced (of the attributes) of a new product, one could logically expect that this individual will act upon this and decide to buy the product. However, previous research showed that individuals not always think and act in the same way (Beal et al., 1966; Bohlen, 1968; Rogers, 1968, 2003). So they successfully move trough the knowledge and persuasion stages, but do not move through the decision stage. The discrepancy that then exists between the persuasion and decision stage is called symbolic adoption, where people are convinced of the product, but something keeps them from making the next step.

However, in general a consumer will go through the innovation decision process to decide whether to buy a new product.

7.2. The influence of consumer behavior variables.

This section focuses on sub-question number two, *Why do people buy / use a social technology innovation as the ceramic water filter, what are important variables?*

7.2.1. Results

Answering this question based on theory led to the development of the right part of the conceptual model. According to the theory of reasoned action, human beings are usually quite rational and make systematic use of the information available to them. Therefore, a person's behavioral intention –in this case adopting the product- is dependent of how that person feels of certain attributes of that product. In the case of the water filter consumer behavior literature on several fields of practice was used to come up with four main attributes that should decide whether a person would adopt the product or not: Economic / marketing variables, Emotions, Social Norms and Hygiene variables.

Combining these insights with the empirical results then leads to several conclusions:

First, since symbolic adopt ion is very high -90% of respondents is positive about the filter- opposed to actual adoption -49,4%-, we can conclude that there is a substantial gap between symbolic and actual adoption.

Also, although we thought that all defined variables would have a significant influence on symbolic adoption, the data suggests that only social norms and perceived quality and hand washing have a significant influence. With less evidence also perceived price and toilet usage show some influence. This suggests that the other variables – perceived distribution and emotion- are not important in the symbolic adoption decision.

Finally, where we also thought that all defined consumer behavior variables would have a significant influence on actual adoption, the results of the empirical research show that for actual adoption only perceived quality, perceived distribution and how often household members wash their hands show significant results, with weak evidence suggesting that users also have better toilet facilities.

7.2.2 Interpreting the results

Building on the theory of reasoned action where symbolic adoption should lead to actual adoption, these results suggest that the most important variables for buying a ceramic water filter in Cambodia currently is the perceived quality of the product, since that is the only product related variable that comes back in both symbolic and actual adoption. Perceived price seems to be of significant influence for symbolic adoption, but not so much for actual adoption. This difference suggests that the individuals that actually make the decision to buy the product are that convinced of the product that they perceive the price as less high. Perceived distribution proves to be of significant influence on actual adoption. The fact that this value only differs significantly in actual adoption suggests that this variable might be of strong importance in turning symbolic adopters to actual adopters; tell them where to buy, or provide a nearer location.

Emotion seems of no significant influence on both adoption and symbolic adoption. This may be caused by the loss of detail in the survey, where a three-item scale had to be reduced to a one-item scale. However, it can also just mean that fear for getting

ill is not a strong influencer on adopting a ceramic water filter; respondents might have enough other things to worry about.

Social norms proved to be of significant influence on symbolic adoption but not so much on actual adoption. This might be explained by the fact that people do let themselves lead by their friends and family, but more in opinions than in actions. Actual adoption means moving up one step in the innovation decision process and that last step might take one's own decision.

The hygiene variables proved to be related to both symbolic and actual adoption in the variables washing hands and toilet facilities. This is explained since these variables indicate how much the respondent is already behaving (washing hands) and investing (toilet facility) hygiene related.

7.3. The influence of social marketing

This section focuses on sub-question number three, *How does Social marketing affect the variables that influence the adoption decision of a social technology innovation as the ceramic water filter?*

7.3.1. Results

Chapter 4 showed that social marketing is about influencing consumers to change from an adverse idea, or to adopt new ideas. In the case of the ceramic water filter, marketing should focus on the idea and practice of drinking purified drinking water and on the tangible product that facilitates this practice. This means that marketing efforts should be balanced between the practice and the product. The empirical research shows that this balance differs between different efforts that are currently taken by filter producers and that this has implications for how consumers think about the consumer behavior variables of the conceptual model.

While it was initially suggested that both focuses, product and practice, would influence the variables, the analysis showed, that a stronger focus on the marketing idea leads to better thoughts on lower perceived price and to more importance of social norms. A stronger focus on the tangible product leads to a better perceived quality and better perceived distribution. Regarding emotions, there are no significant differences between both different approaches and for hygiene the results differ.

7.3.2. Interpreting the results

The results show the potential of social marketing as a combined strategy, but also immediately show the difficulty of a combined focus; where should one focus on? Answering that last question depends probably on the situation at stake and will be the subject of the next paragraph. However it is clear that both constructs of social marketing complement each other, as they seem to influence different variables.

The fact that a focus on the social marketing idea or habit leads to more influence of social norms is logically explainable by the fact that it opens a social debate on drinking water. Especially in the way it was executed in this situation –visiting a village with a big truck and campaigning in the village center- it is logical that villagers will discuss the campaign and the product and social norms influence become important. The fact that these people perceive the price as lower is more surprising, since they have paid a subsidized price ($2,50) and are asked about the unsubsidized price ($12,50). However,

this might exactly be the reason for this phenomenon: they have not actually paid the high price, that the other sample had paid and therefore realize the less what sacrifices need to be made to pay such a price with an average annual income of $490[3]. On the other hand, the health risks that were promoted in the campaign can also cause for a higher perceived value of the filter; it explains why one should purify water. The fact that this sample also was the group that named removing bacteria's (36%) and preventing sickness (22%) as reasons for purifying water opposed to 13% and 0% in Kompong Cham.

Better results in terms of perceived quality and perceived distribution by a stronger focus on marketing the tangible product is explainable by the fact that these variables are build around the product. If it is more the product that is promoted, people should think better of that product. The fact that distribution is perceived better is explainable that in this approach consumers can buy the filter at the local market and large road signs promote the location, whereas in the other approach the village was visited and people might not know or remember where they can buy new filters or spare parts at a later moment. This was often repeated in conversations with villagers in Kandal Province.

7.4. How Social marketing can influence adoption

To finish this chapter, this paragraph focuses on answering the main research question, *How can social marketing influence the adoption decision of Ceramic Water Filters in less developed countries?*

7.4.1. Answering the main question

According to theory, social marketing makes use of commercial marketing concepts to change behavior. Therefore it is important to think from the view from the customer in all marketing efforts (Anderson, 1995). This statement puts an emphasis on the empirical outcomes of this research in answering a question on how *does* social marketing influence the adoption decision. However, since this question focuses on how social marketing *can* influence the adoption decision, literature on how consumers think and behave should be included to assess the potential of social marketing.

When taking just the empirical results one might suggest that social marketing should focus solely on the variables that matter for adoption. This would mean a focus on the filter's quality and the distribution channels and directed at consumers that already invest in and act according to hygiene related thoughts. One step further this would mean a focus marketing the tangible product, since this strategy proved to lead to significant higher results in perceived quality, perceived distribution and in some of the hygiene related variables and, therefore, should lead to higher sales.

However when taking into account literature combined with the empirical results, even better results of social marketing could be obtained by a more balanced combination of marketing of the social idea and marketing of the tangible product. Following the theory of reasoned action (Fishbein and Ajzen, 1975) and the innovation decision process (Roberts, 2003), people need to positively assess a product's attributes (persuasion stage) and will then decide to buy this product and act upon that decision (decision stage).

[3] According to "World Bank Development Indicators 2007"

However, in this case there seems to be a big gap between symbolic adopters (90%) and actual adopters (49,5%) and probably this gap is even bigger, since the number of actual adopters was controlled through quota sampling. Getting these symbolic adopters to become actual adopters would mean great potential for filter use and following literature this must be a small step. The empirical results show that the important variables for symbolic adoption are high involvement of social norms, a high perceived quality of the product, the presence of toilet facilities and washing hands, while the important variables for actual adoption were perceived quality, distribution, toilet facilities and washing hands.

Following Fishbein and Ajzen (1975) and Roberts (2003) social marketing would therefore use it's potential best in the combination of the current approaches where potential consumers can adopt the product in two steps: A focus on the social idea and habit (drinking purified water) to make people think and discuss the filter and make them form positive attitudes to the filter and a focus on the tangible product (the filter) to gain high perceived quality and make people aware of where to buy the filter to actually sell the filter. In practice this would still mean coming to villages with a campaign, but after or while establishing and promoting a permanent selling point in that village so there is a constant follow-up for the campaign, since distribution currently proves to be the critical factor between symbolic and actual adoption.

7.4.2. Limitations

Although this research aimed to come to valid results, there are several phenomena that might limit the results. The most important limitation is that the researcher did not speak the local language, Khmer. Although this was partially solved by hiring translators to translate the questionnaire and did local people execute the surveys, this caused the outcomes of the empirical study to be a somewhat black box. The researcher did try to come to more detailed knowledge by making conversations through a translator on the village squares, but in dept knowledge outside the interviews was difficult to obtain from first hand and there was large dependency on the translators.

Second, although this research is about a social technology innovation in a developing country, it might be difficult to transfer the results to other situations. Specific marketing methods may differ for different situations, however, though further research is needed, the researcher expects that effective social marketing in those situations would always also ask for a combined approach.

Third, there are currently 14.2 million people living in Cambodia[4] making a sample of 129 rather small. However this research focuses on adoption in the rural areas where the researcher expects that the situation will be quite similar. Therefore, although this research gives no hard evidence for transferability throughout the whole country, the researcher expects that the insights can be valuable in all rural districts.

Lastly, this research was executed at the end of the rainy season where there is large supply of fresh (rain) water. This might have influenced the survey answers, as water usage might differ between the dry and rainy season. However, the researcher

[4] According to "World Bank Development Indicators 2007"

expects that the relations between the variables will not differ. Since the consumer behavior variables are not related to rainfall.

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Appendices:

Appendix 1: Checklist interviews

EXTERNAL
To whom are you currently selling the CWF, what kind of customers do you distinguish?
How much are you selling to each segment?
How did each segment evolve from the beginning?
Where do you think is the most room for growth? Why?
Were there other clients in the past or are there new clients imaginable?

Who are your main competitors and substitutes?
Who are the market leaders?
How do their products differ from yours? How does their positioning differ? How successful are they?
How do you compete with them? Why did you choose for this strategy? Is this successful? What other strategies have you discussed?

PRODUCT
How do you think your product creates value for you customer / Why do you think your customers buy your filter?

What are the main product and brand characteristics you communicate to the market? Why these and how are you communicating them? Is this successful / what works in this market, what doesn't work?

PRICE
For what price are you currently selling the CWF? What are the grounds for this price?
Did you always have this price, or have you changed in the past?
If yes, how did the market react?
Do you discriminate with your price between different segments? Why?
Do you think your customers think this is a good price? What makes you think this?
What do you think will happen if the price would rise / be lowered now?

What is the cost price of the CWF?
Are you making profit / reaching break even on the CWF?

PLACE
Through what channels are you selling your product? (direct selling / distributors)
How much are you selling through each channel?
How did each channel develop over time?
Where do you think there is the most room for growth?
What do you think is the best channel for a product like yours?

Is your product available throughout the whole country?
Was this the case since the beginning? How did it develop?

What growth strategy did you use? Why? Did it work the way you planned?
How is your relation with the other parties like competition in the supply chain?
Do you cooperate in health education? Why (not)? Is his successful?

PROMOTION
What was your communication budget in the last 5 years?
What kinds of promotion activities were undertaken in the last 5 years?
How and why did you choose for these activities?
What (how much) activities, do you think, can be viewed as successful? Why?
What activities (how much) were not really successful? Why?

Appendix 2: Questionnaire CWF A4A

- Ask to interview the primary caregiver of the household (if available)
- Make sure the users of ceramic water filters have paid for the filter
- Non-users of the filters must have heard of ceramic filters and preferably live near users that have been interviewed

TO BE FILLED OUT BY THE SURVEYOR:

Date: ……..

Village……..… District: ……..…. Province…….

Name of respondent: …….. Sex ……..… Age……

Marital Status: Married / Widow / Single / Divorced Household size……

Number of Children …….

Children's age……. Ever heard of CWF: Yes / No

Impression of state of house: ……..

Impression of wealth of family: ……

Name of Surveyor:.....

Some words before the interview gets started:

- Dear sir / madam, we would like to ask you a few questions about the way you use water in your household. With your answers we hope to contribute to reducing water problems and sickness in Cambodia.
- The questionnaire exists out of 44 questions regarding water use, Ceramic water filters (like the rabbit water filter) and your decision to buy or not buy a ceramic water filter.
- There are no right or wrong answers; it's not a test, just a survey.
- Thank you very much for your cooperation.

START

- **First we would like to ask you some general question about your water usage:**

1. What is the main water source that this household currently uses for drinking?

☐ Lined Open Well ☐ Pond ☐ Rain water
☐ Unlined Open Well ☐ Lake ☐ Other
☐ Tube Well ☐ Stream/River

2. How far is your water source from your house?

□1. < 100m □2. 100m - 499m □3. 500m - 999m □ 4. 1 km - 5km
□5. > 5km □6. Other…… □7. Don't know

3. How much of the water you and your family drink is purified (*from a filter, boiled, or bottled water*)?

□All □Most (>3/4th) □Some (1/4th to 3/4th) □Little (<1/4th) □None □I don't know

4. why don't you drink untreated water?

check all that apply

□It's contaminated with dirt
□It's contaminated with feces/human or animal waste
□It's contaminated with bacteria, germs, viruses, parasites
□It tastes bad
□ It smells bad
□It makes me (us) feel bad or sick
□There are insects or bugs in it
□Other…….

5. do you ever treat (purify) your water? □Yes □No

check all that apply

□Boiling □Chlorination using bleach
□Other chemical treatment…….
□Letting the water "settle" □Sand filter
□Coagulation using alum or other coagulant……..
□Other treatment:……

CERAMIC WATER FILTERS

- **Now, we would like to know more about how you think of ceramic water filters:**

6. Have you seen or heard of a Ceramic Water Filter for producing clean water?

☐ Yes ☐ No

7. Do you believe a ceramic water filter is a good, useful product?

☐Not at al ☐Maybe a bit ☐Reasonably useful ☐Very useful.

8. Do you have a ceramic water filter?
☐ Yes ☐ No

If yes, ask to see the filter. Wet or moist inside: Yes / No

Questions: When have you bought the filter? ……

how much have you paid for the filter? $……

Who made the decision to buy the filter?
□You □Someone else, ...

If no, question: ever thought of buying a ceramic water filter? Yes / No

9. What do you think a fair price for the filter? $…..

10. What do you think of the price of a ceramic water filter?
□Very high □High □Normal □Low □Very Low

11. Does the filter improve the taste and smell of water?
□Yes □No, it does not change the taste or smell
□No, the taste and smell is *different* but not necessarily *better*
□No, it makes it worse
□Other response:……..

- **The following questions are statements. Please tick the box of the answer that comes closest to the way you feel about the statement:**

12. I think the price of a ceramic water filter is much too high:
□Totally disagree □Disagree □Do not disagree or agree □Agree □Totally agree

13. The price of a ceramic water filter is no barrier to purchase it:
□Totally disagree □Disagree □Do not disagree or agree □Agree □Totally agree

14. I can easily reach a store where I can buy a ceramic water filter:
□Totally disagree □Disagree □Do not disagree or agree □Agree □Totally agree

15. In my neighborhood / village there are sufficient places where I can get ceramic water filters:
□Totally disagree □Disagree □Do not disagree or agree □Agree □Totally agree

- **The following questions are about how you rate filtered water compared to untreated, boiled or chemical treated water. Please tick the box that comes closest to the way you think:**

16. What do you think of the characteristics of the water from the ceramic water filter in comparison with untreated surface water? Are these attributes much worse, worse, as good as, better or much better than those of untreated water?

Taste	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Smell	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Appearance	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Temperature	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Acceptability to family members	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Healthiness	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*

17. What do you think of the characteristics of the water from the ceramic water filter in comparison with boiled water? Are these attributes much worse, worse, as good as, better or much better than those of other water purifiers?

Taste	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Smell	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Appearance	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Temperature	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Acceptability to family members	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Healthiness	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*

18. What do you think of the attributes of the water from the ceramic water filter in comparison with chemical treated water? Are these attributes much worse, worse, as good as, better or much better than those of other water purifiers?

Taste	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Smell	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Appearance	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Temperature	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Acceptability to family members	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*
Healthiness	□*much worse*	□*worse*	□*as good as*	□*better*	□*much better*

- ***The following questions are about how you feel about drinking unpurified water, please tick the box that comes closest to the way you feel:***

Imagine the following situation: You have just collected some water from the well, pump, etc. You are planning to use it and drink it tonight without purifying. Then you start thinking about the health consequences of drinking unpurified water. To what extent are the following feelings present after drinking water without purifying?

19. Worried / Scared / Afraid
□To a very low extent □to a low extent
□Neither low / neither high
□to a high extent □to a very high extent

- **The next statements are about how you made your decision to buy or not buy a ceramic water filter. Please tick the box of the answer that comes closest to the way you feel about the statement:**

20. I have sought information about ceramic water filters from an association of professionals or an independent group of experts.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

21. I have sought information about ceramic water filters from those who work with water filters as a profession.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

22. I have sought information about ceramic water filters from friends, neighbors, relatives, or work associates who have reliable information about the product.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

23. When I see experts using a certain product I think it is a good product.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

24. My decision to purchase / not purchase the ceramic water filter…
is influenced by the preferences of my neighbours.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

25. My decision to purchase / not purchase the ceramic water filter is influenced by the preferences of my friends.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

26. My decision to purchase / not purchase a ceramic water filter is influenced by the preferences of my family.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

27. The desire to satisfy the expectations that others have of me influenced my decision to buy or not buy a ceramic water filter.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

28. If I buy a ceramic water filter or because I bought a ceramic water filter, others think better of me.
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

29. I would like to have the same characteristics that people possess that use a ceramic water filter
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

30 I think that others admire people that use a ceramic water filter
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

31. I feel that the purchase of a ceramic water filter helps me to show others what I am, or would like to be (such as successful, a good mother or good father, etc)
□Totally agree □Agree a bit □Disagree a bit □Totally disagree

- **Thanks for your cooperation so far. The questionnaire will now end with 13 final questions:**

32. When you need to go to the toilet, where do you go?
□On the ground or on land □In a latrine I share with neighbors
□In our own private latrine
□Other……..

33. After using the toilet, before cooking, before prepare the food, etc. do people in your household wash their hands?
□1. Yes, always (everyone, all the time) □2 Sometimes (some people, some of the time) □3. No (never or rarely) □4. I don't know

34. If yes, how do you wash your hands? □With water only
□With bar soap and water □With powdered detergent and water
□Other……

35. Do you have soap in the house? □Yes □No
[*Ask to see the soap and confirm*] □Soap is present in household

36. Do you discuss health or hygiene matters with your friends?
□Always □Often □Sometimes □Never

37. Do you receive health information at the Medical Centre?
□Always □Often □Sometimes □Never

38. Do you attend health classes at the Medical Centre?
□Always □Often □Sometimes □Never

39. How many rooms are there in this house?
□1 □2 □3 □4 □5 or more

40. Do you own your home?
□Yes □No, it's rented □No, but we don't pay rent

41. Do you have electricity?

□1. Yes □2. No

42. What level of education do you have?

□I did not went to school □elementary school □secondary school □high school □university

- **Thank you very much for your cooperation!**

Appendix 3: Questionnaire Khmer

ក្រដាសសំនួរ CWF A4A

→ ធ្វើការសាកសួរសំភាសន៏ទៅអ្នកដែលត្រប់ត្រងថែរក្សាផ្ទះសម្បែងមុនគេ (បើសិនជាអាចធ្វើបាន)

→ សូមឱ្យប្រាកដថាអ្នកដែលប្រើជើងចំរោះទឹកស្អាតបានទិញជើងចំរោះទឹកនោះ

→ អ្នកដែលមិនបានប្រើប្រាស់ជើងចំរោះទឹកស្អាតត្រូវតែធ្លាប់បានលឺពីជើមចំរោះទឹកស្អាតនោះ

ហើយក៏ជាអ្នកដែលរស់នៅជិតអ្នកប្រើប្រាស់ដែលធ្លាប់បានទទួលការសំភាសន៏រួចហើយ ។

ធ្វើការបំពេញដោយអ្នកធ្វើអង្កេត

ថ្ងៃខែឆ្នាំ:.....

ភូមិ..... ស្រុក..... ខេត្ត.....

ឈ្មោះអ្នកដែលបានសំភាសន៏..... ភេទ..... អាយុ.....

ស្ថានភាពគ្រួសារ : រៀបការហើយ / មេម៉ាយ. ពោះម៉ាយ / នៅលីវ / លែងលះគ្នា

សមាជិកគ្រួសារ.....

មានកូនចំនួនប៉ុន្មាននាក់..... ធ្លាប់លឺពីCWF ដែរឬទេ: ធ្លាប់ / មិនធ្លាប់

អាយុរបស់កូន.....

ចំណាប់អារម្មណ៏នៃសភាពផ្ទះសម្បែង.....

ចំណាប់អារម្មណ៏នៃធនធានរបស់គ្រួសារ.....

ឈ្មោះអ្នកចុះធ្វើអង្កេត :.....

ពាក្យនួរៗដែលប្រើមុនពេលធ្វើការសំភាសន៏ចាប់ផ្តើម :

- ជូនចំពោះលោក/លោកស្រី យើងខ្ញុំមានសំនួរខ្លះចង់សួរពីពីធីដែលលោកអ្នកប្រើប្រាស់ទឹកនៅក្នុងផ្ទះរបស់លោកអ្នក។ ជាមួយនឹងចំលើយរបស់លោកអ្នកយើងខ្ញុំសង្ឃឹមថានេះជាការជួយយ៉ាងសំខាន់ក្នុងការកាត់បន្ថយបញ្ហានៃការប្រើប្រាស់ទឹកនិងពីបញ្ហាសុខភាពផ្សេងៗក្នុងប្រទេសកម្ពុជា។
- រាល់ចំលើយទាំងអស់មិនមែនជាចំលើយត្រូវ ឬ ខុសទេ. លើយក៏មិនមែនជាការប្រលងអ្វីដែរ. គឺគ្រាន់តែជាការធ្វើអង្កេតតែប៉ុណ្ណោះ ។

1

- បញ្ជីសំនួរធ្វើឡើងដោយមាន 43 សំនួរដែលត្រូវសួរអំពីការប្រើប្រាស់ទឹក ការប្រើប្រាស់ផើងចំរោះទឹកស្អាត (ដូចជាផើមចំរោះទឹកស្អាតប្រូបឌ្យាយ) និងជាការសំរេចចិត្តរបស់លោកអ្នកថាតួរជាវ៉ឺ មិនជាវផើមចំរោះទឹកស្អាត។
- សូមអរគុណដល់លោកអ្នកជាខ្លាំងដែលបានចំណាយពេលចូលរួមសហការណ៍

<u>ការចាប់ផ្តើម</u>

- **ជាដំបូងយើងខ្ញុំសូមសួរសំនួរធម្មតាខ្លះៗដល់លោកអ្នកពីការប្រើប្រាស់ទឹករបស់លោកអ្នក:**

១. តើប្រភពទឹកដែលសំខាន់មួយណាដែលបច្ចុប្បន្នលោកអ្នកប្រើប្រាស់ក្នុងផ្ទះសំរាប់បរិភោគ ?

☐ អណ្តូង ☐ ស្រះ, ត្រពាំង, ថ្នុក ☐ ទឹកភ្លៀង

☐ ក្រៅពីទឹកអណ្តូង ☐ បឹង ☐ ផ្សេងៗទៀត

☐ ទឹកម៉ាស៊ីន ☐ ស្ទឹង, អូរ/ទន្លេ

២. តើចំងាយពីផ្ទះរបស់លោកអស់ទៅប្រភពទឹកនោះមានចំងាយប៉ុន្មាន?

☐ ១. តិចជាង ១០០ម៉ែត្រ ☐ ២. ពី១០០ម៉ែត្រទៅ ៤៩៩ម៉ែត្រ

☐ ៣.ពី៥០០ម៉ែត្រទៅ៩៩៩ម៉ែត្រ ☐ ៤. ពី១គីឡូម៉ែត្រទៅ ៥គីឡូម៉ែត្រ

☐ ៥. លើសពី៥គីឡូម៉ែត្រ ☐ ៦. ផ្សេងៗទៀត ☐ ៧.មិនដឹង

៣. តើលោកអ្នកនិងក្រុមគ្រួសាររបស់លោកអ្នកបរិភោគទឹកស្អាតអស់ប៉ុន្មានដែរ? (ទឹកស្អាតពីផើងចំរោះ, ទឹកម៉ាពុះ ឬក៏ទឹកដបបរិសុទ្ធ)?

☐ ម៉ាងអស់ ☐ ភាគច្រើន (លើសពី $\frac{3}{4}$) ☐ ខ្លះៗ (ពី $\frac{1}{4}$ ទៅ $\frac{3}{4}$)

☐ តិច (តិចជាង $\frac{1}{4}$) ☐ អត់សោះ ☐ អត់ដឹង

៤. [ប្រសិនបើលោកអ្នកប្រើទាំងអស់ ឬក៏ភាគច្រើនប្រើទឹកស្អាត] តើហេតុអ្វីបានជាលោកអ្នកមិនបរិភោគទឹកដែលមិនស្អាត? {សូមកុំអានចំលើយឱ្យគេស្តាប់ សូមចាំគូសនូវចំលើយដែលគេប្រាប់វិញ }

☐ វាឆ្លងរោគពីដី

☐ វាឆ្លងរោគពីលាមក / កាកសំណល់ពីមនុស្ស ឬសត្វ

☐ វាឆ្លងរោគពីពួកមេរោគបាក់តេរី, ផង្សិ, វីរុស, ប៉ារ៉ាស៊ីត

☐ វាមានរសជាតិមិនល្អ

☐ វាមានក្លិនមិនល្អ

☐ វាអាចធ្វើឱ្យខ្ញុំ (យើង) មានអារម្មណ៍មិនស្រួល ឬក៏ឈឺ

☐ វាមានសត្វល្អិត ឬក៏កូនសត្វតូចៗនៅក្នុងនោះ

☐ ផ្សេងៗ........................

៥. តើលោកអ្នកធ្លាប់សំអាតទឹក (ធ្វើឱ្យទឹកស្អាត) របស់លោកអ្នកដែរឬទេ? ☐ ធ្លាប់ ☐ មិនធ្លាប់

{សូមកុំអានចំលើយប្រាប់. សូមចាំគូសនូវចំលើយដែលគេប្រាប់វិញ }

☐ ដាំពុះ ☐ ការសំលាប់មេរោគដោយប្រើសារធាតុគួរធ្វើឱ្យទៅជាពណ៌ស

☐ ការប្រើប្រាស់សារធាតុគីមីផ្សេងៗសំរាប់ធ្វើការសំអាត...........

☐ ទុកឱ្យទឹកអោយវារងដោយឯកឯង ☐ ប្រើដីខ្សាច់ដើម្បីច្រោះទឹក

☐ ប្រើអាលុយមិត្តំមដើម្បីឱ្យទឹករង ឬក៏ធ្វើឱ្យទឹករងដោយប្រើវិធីផ្សេងទៀត.....

☐ វិធីសំអាតទឹកផ្សេងទៀត.....

ធើងចំរោះទឹកស្អាត

- **ឥឡូវនេះយើងខ្ញុំចង់ដឹងបន្ថែមទៀតពីព័ត៌មានរបស់លោកអ្នកក្នុងការប្រើប្រាស់ធើងចំរោះទឹកស្អាត**

៦. តើលោកអ្នកធ្លាប់ឃើញ ឬក៏ឮពីធើងចំរោះទឹកស្អាត (ដូចជា ធើងចំរោះទឹកស្អាតរូបខាងក្រោយ) សំរាប់ប្រើប្រាស់ច្រោះទឹកឱ្យបានស្អាត ដែរឬទេ?

☐ ធ្លាប់ ☐ មិនធ្លាប់ទេ

៧. តើលោកអ្នកជឿជាក់ថា ធើងចំរោះទឹកស្អាតវាល្អ. ងាយស្រួលប្រើប្រាស់ដែរឬទេ?

☐ មិនល្អសោះ ☐ ប្រហែលល្អតិចតួចដែរ ☐ ល្អប្រើដែរ ☐ ល្អប្រើណាស់

៨. តើលោកអ្នកមានធើងចំរោះទឹកស្អាតដែរឬទេ?

☐ មាន ☐ មិនមាន

ប្រសិនបើមាន សូមសុំមើលចំរោះទឹកនោះ មានទឹក ឬមានសំរាមនៅខាងក្នុងធើងឬអត់ : មាន / គ្មាន

សំនួរ : តើលោកអ្នកបានទិញធើងចំរោះទឹកស្អាតពេលណា ?.....

តើលោកអ្នកទិញធើងចំរោះទឹកស្អាតនោះតំលៃប៉ុន្មានដែរ? $.....

តើអ្នកណាជាអ្នកសំរេចចិត្តក្នុងការទិញធើងចំរោះទឹកស្អាតនោះឬ ?

☐ លោកអ្នកផ្ទាល់ ☐ អ្នកណាផ្សេងទៀត

ប្រសិនបើមិនមានទេ. សំនួរ :តើលោកអ្នកធ្លាប់គិតថានឹងទិញធើងចំរោះទឹកស្អាតយកមកប្រើដែរឬទេ?

ធ្លាប់គិត / មិនធ្លាប់គិត

៩. តើលោកអ្នកយល់ថាតើតំលៃប៉ុន្មានដែលសមរម្យសំរាប់ធើងចំរោះទឹកស្អាតមួយ? $.....

១០. តើលោកអ្នកយល់យ៉ាងដូចម្តេចដែរចំពោះតំលៃរបស់ធើងចំរោះទឹកស្អាត?

☐ ថ្លៃណាស់ ☐ ថ្លៃ ☐ សមរម្យ ☐ ថោក ☐ ថោកណាស់

១១. តើធើងចំរោះទឹកស្អាតជួយឱ្យទឹកមានរស់ជាតិល្អ និងមានក្លិនល្អដែរឬទេ?

☐ ជួយ ☐ មិនជួយទេ វាមិនធ្វើឱ្យទឹកប្លែករស់ជាតិឬប្លែកក្លិនទេ

☐ មិនជួយទេ រស់ជាតិនិងក្លិនទឹកវាមិនប្រែប្រួល ប៉ុន្តែវាដូចជាមិនគ្រាន់បើសោះ

☐ មិនជួយទេ វារឹតតែអាក្រក់ជាងមុនទៅទៀត

☐ ចំលើយផ្សេងទៀត.....

សំនួរខាងក្រោមនេះជារបាយការណ៍ សូមលោកអ្នកចូល ☑ ក្នុងប្រអប់ដែលនៅខាងមុខចំលើយដែលលោកអ្នកគិតថាត្រឹមត្រូវសំរាប់របាយការណ៍នេះ

១២. ខ្ញុំគិតថា តំលៃរបស់ធើងចំរោះទឹកស្អាត គឺវាថ្លៃណាស់ :

☐ មិនយល់ស្របទាំងស្រុង ☐ មិនយល់ស្រប ☐ មិនយល់ស្របដែរ ឬយល់ស្រប

☐ យល់ស្រប ☐ យល់ស្របទាំងស្រុង

១៣. ចំពោះតំលៃរបស់ធើងចំរោះទឹកស្អាត វាមិនមែនជាឧបសគ្គក្នុងការទិញយកមកប្រើប្រាស់នោះទេ:

☐ មិនយល់ស្របទាំងស្រុង ☐ មិនយល់ស្រប ☐ មិនយល់ស្របដែរ ឬយល់ស្រប

☐ យល់ស្រប ☐ យល់ស្របទាំងស្រុង

១៤. ខ្ញុំអាចទៅទិញធើងចំរោះទឹកស្អាតបានយ៉ាងស្រួលនៅតាមហាងលក់ទំនិញ:

☐ មិនយល់ស្របទាំងស្រុង ☐ មិនយល់ស្រប ☐ មិនយល់ស្របដែរ ឬយល់ស្រប

☐ យល់ស្រប ☐ យល់ស្របទាំងស្រុង

១៥. នៅម្តុំសង្កាត់របស់ខ្ញុំ/ ភូមិខ្ញុំ មានកន្លែងគ្រប់គ្រាន់ដែលខ្ញុំអាចរកទិញធើងចំរោះទឹកស្អាតនេះបាន:

☐ មិនយល់ស្របទាំងស្រុង ☐ មិនយល់ស្រប ☐ មិនយល់ស្របដែរ ឬយល់ស្រប

☐ យល់ស្រប ☐ យល់ស្របទាំងស្រុង

សំនួរខាងក្រោមនេះគឺសួរអំពីតើលោកអ្នកធ្វើការប្រៀបធៀបយ៉ាងដូចម្តេចចំរោះទឹកដែលចេញពីធុងចំរោះ ជាមួយនឹងទឹកដែលមិនបានសំអាត. ទឹកទាំងពុះ រឺក៏ទឹកដែលសំអាតដោយប្រើសារធាតុគីមី .សូមលោកអ្នកគូស ˇ√ˇ ក្នុងប្រអប់ដែលនៅពីមុខចំលើយទៅតាមគំនិតរបស់លោកអ្នក ។

១៦. តើលោកអ្នកគិតយ៉ាងដូចម្តេចពីលក្ខណៈរបស់ទឹកដែលចេញពីធែងចំរោះទឹកស្អាត បើយើងយកទៅប្រៀបធៀបជាមួយ នឹងទឹកដែលមិនបានសំអាត ? តើគុណភាពទឹកចំរោះនោះវិតតែអាក្រក់ជាង. អាក្រក់. ល្អដូចគ្នា. ល្អជាង រឺក៏ល្អប្រសើរ ជាងទឹកដែលមិនបានធ្វើការសំអាត ?

រសជាតិ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ក្លិន	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ពណ៌	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
កំដៅ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ការទទួលយកសមាជិកទៅក្នុងគ្រួសារ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
សុខភាព	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង

១៧. តើលោកអ្នកគិតយ៉ាងដូចម្តេចដែរពីលក្ខណៈរបស់ទឹកដែលចេញពីចំរោះទឹកស្អាត បើយើងយកទៅប្រៀបធៀបជាមួយនឹង ទឹកដាំពុះ ? តើគុណភាពទឹកចំរោះនោះវិតតែអាក្រក់ជាង. អាក្រក់. ល្អដូចគ្នា. ល្អជាង ឬ ក៏ល្អប្រសើរជាងទឹកដែលដាំពុះ?

រសជាតិ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ក្លិន	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ពណ៌	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
កំដៅ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ការទទួលយកសមាជិកនៅក្នុងគ្រួសារ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
សុខភាព	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង

១៨. តើលោកអ្នកគិតយ៉ាងដូចម្តេចដែរពីគុណភាពរបស់ទឹកដែលចេញពីធើងចំរោះទឹកស្អាត បើយើងយកទៅប្រៀបធៀបនឹង ទឹកដែលសំអាតដោយប្រើសារធាតុគីមី ? តើគុណភាពទឹកចំរោះនោះវិតតែអាក្រក់ជាង. អាក្រក់. ល្អដូចគ្នា. ល្អជាង ឬក៏ ល្អប្រសើរជាងទឹកដែលសំអាតដោយសារធាតុគីមី ?

រសជាតិ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ក្លិន	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ពណ៌	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
កំដៅ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
ការទទួលយកសមាជិកនៅក្នុងគ្រួសារ	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង
សុខភាព	☐ អាក្រក់ជាង	☐ អាក្រក់	☐ ល្អដូចគ្នា	☐ ប្រសើរជាង	☐ ល្អប្រសើរជាង

- សំនួរតីសួរថាតើលោកអ្នកមានអារម្មណ៍បែបណាទៅពេលដែលលោកអ្នកបរិភោគទឹកមិនស្អាត. សូមលោកអ្នកគូស " √ " ក្នុងប្រអប់ដែលនៅមុខចំលើយ ទៅតាមអារម្មណ៍របស់លោកអ្នក :

សូមធ្វើការស្រមើស្រមៃថានៅក្នុងស្ថានភាពដូចខាងក្រោមនេះ : លោកអ្នកបានទៅយកទឹកចេញពីអណ្តូង. ពីម៉ាស៊ីនបូមទឹក. ពីកន្លែងដទៃទៀត ។ លោកអ្នកមានគំរោងថានឹងប្រើប្រាស់ទឹកនោះបរិភោគយប់នេះដោយមិនចាំបាច់សំអាតទឹកនោះឡើយ ។ បន្ទាប់មកលោកអ្នកចាប់ផ្តើមគិតសារជាថ្មីម្តងទៀតដោយយល់ពីផលអាក្រក់នៃសុខភាពដែលបណ្តាលមកពីការបរិភោគទឹកមិនស្អាត ។ តើអនុភាពអ្វីដែលពណ៌នាពីអារម្មណ៍ទាំងប៉ុន្មានខាងក្រោមនេះពីការបរិភោគទឹកមិនស្អាត ?

១៩. តើមានការព្រួយបារម្ភ និងភ័យខ្លាចក្នុងការឆ្លងជំងឺដែរឬទេ?

☐ តិចតួចណាស់ ☐ តិចៗ ☐ ខ្លាំងដែរ ☐ ខ្លាំង ☐ ខ្លាំងណាស់

- សំនួរបន្ទាប់មកទៀតគឺសួរពីការសំរេចចិត្តរបស់លោកអ្នកក្នុងការជាវ រឺ មិនជាវផើងចំរោះទឹកស្អាត. សូមលោកអ្នកគូស " √ " ក្នុងប្រអប់ដែលនៅពីមុខចំលើយ. តាមលោកអ្នកយល់ឃើញ ។

២០. ខ្ញុំបានស្វែងរកពត៌មានដែលស្តីអំពីផើងចំរោះទឹកស្អាតពីសមាគមន៍នៃវិជ្ជាជីវៈ រឺ ពីក្រុមអ្នកជំនាញមួយក្រុម :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២១. ខ្ញុំបានស្វែងរកពត៌មានពីផើងចំរោះទឹកស្អាតនេះពីបុគ្គលិកដែលធ្វើការខាងចំរោះទឹក:

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២២. ខ្ញុំបានស្វែងរកពត៌មានពីផើងចំរោះទឹកស្អាតពីមិត្តភ័ក្រ. អ្នកជិតខាង. បងប្អូន រឺ ក៏ពីអ្នកនៅសមាគមន៍ការងារដែលតែបានដឹងពីផើងចំរោះនោះ :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២៣. នៅពេលដែលខ្ញុំបានឃើញអ្នកជំនាញគាត់ប្រើប្រាស់ផើងចំរោះទឹកស្អាតនោះខ្ញុំគិតថាវាគឺជារបស់ល្អមួយសំរាប់ប្រើប្រាស់ :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២៤. ដើម្បីផ្គាប់ចិត្តនឹងការសង្ឃឹមទុកដល់អ្នកជិតខាងខ្ញុំ ហេតុដូច្នេះហើយខ្ញុំក៏សំរេចចិត្តក្នុងការទិញ រឺ មិនទិញជើងចំរោះទឹកស្អាតយកមកប្រើប្រាស់

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២៥. ការសំរេចចិត្តរបស់ខ្ញុំក្នុងការទិញ រឺ មិនទិញជើងចំរោះទឹកស្អាតគឺអាស្រ័យទៅលើការចូលចិត្តរបស់មិត្តភ័ក្រខ្ញុំ :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២៦. ការសំរេចចិត្តរបស់ខ្ញុំក្នុងការទិញ រឺ មិនទិញជើងចំរោះទឹកស្អាតគឺអាស្រ័យទៅលើការចូលចិត្តរបស់ក្រុមគ្រួសារខ្ញុំ :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២៧. គោលបំណងក្នុងការបំពេញចិត្តនិងក្តីសង្ឃឹមពីសំណាក់មនុស្សដ៏ទៃទៀត ដែលមានឥទ្ធិពលមកលើខ្ញុំ ក្នុងការសំរេចចិត្តទិញ រឺ មិនទិញជើងចំរោះទឹកស្អាត :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២៨. ប្រសិនបើខ្ញុំទិញជើងចំរោះទឹកស្អាត យកមកប្រើប្រាស់ នោះធ្វើឱ្យមនុស្សដ៏ទៃទៀតគិតថាខ្ញុំជាមនុស្សល្អ:

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

២៩. ខ្ញុំចង់ឱ្យបានភាពល្អប្រសើរ ដូចជាអ្នកដែលបានប្រើប្រាស់ជើងចំរោះទឹកស្អាតដែរ :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

៣០. ខ្ញុំគិតថាអ្នកដ៏ទៃនឹងកោតសរសើរដល់អ្នកណាដែលបានប្រើប្រាស់ជើងចំរោះទឹកស្អាត :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

៣១. ខ្ញុំមានអារម្មណ៍ថាពេលខ្ញុំទិញជើងចំរោះទឹកស្អាតហើយ វាពិតជាអាចជួយអោយខ្ញុំបង្ហាញប្រាប់ដល់អ្នកដ៏ទៃថា ខ្ញុំជាមនុស្សដែលមានជ័យជំនះ. ជាម្តាយបំផ្លេមួយរូប. ។ល។ :

☐ យល់ស្របទាំងស្រុង ☐ យល់ស្របខ្លះៗ ☐ មិនយល់ស្របខ្លះៗ ☐ មិនយល់ស្របទាំងស្រុង

- **យើងខ្ញុំសូមថ្លែងអំណរគុណយ៉ាងខ្លាំងចំពោះការសហការរបស់លោកអ្នក ។ ឥឡូវនេះយើងខ្ញុំមានសល់តែ ១៣ សំនួរទៀតប៉ុណ្ណោះសំរាប់សួរដល់លោកអ្នក :**

៣២. នៅពេលដែលលោកអ្នកត្រូវការទៅបង្គន់ . តើលោកអ្នកទៅឯណា ? (សូមកុំអានចំលើយប្រាប់គេ សូមចាំគូសចំលើយដែលគេប្រាប់វិញ)

☐ នៅលើដី ☐ នៅក្នុងបង្គន់ដែលខ្ញុំប្រើជាមួយនឹងអ្នកជិតខាង ☐ នៅក្នុងបង្គន់ផ្ទាល់របស់ខ្ញុំ

☐ ផ្សេង១ដ៏ទៃទៀត..

៣៣. បន្ទាប់ពីចេញពីបង្គន់ហើយ. មុនពេលចំអិនអាហារ. មុនពេលរៀបចំម្ហូបអាហារ. ។ល។.............
តើសមាជិកក្នុងក្រុមគ្រួសាររបស់លោកអ្នកមានលាងដៃសំអាតដែរឺទេ ?

☐ មាន. សំអាតជានិច្ច (គ្រប់១ព្ភា. សំអាតគ្រប់ពេល)

☐ មានខ្លះៗដែរ (អ្នកខ្លះសំអាត. ពេលខ្លះសំអាត)

☐ មិនមានទេ (មិនដែលៈសោះ. រឺកំរណាស់)

☐ ខ្ញុំមិនដឹងទេ

៣៤. (ប្រសិនបើមាន) តើលោកអ្នកធ្វើការសំអាតដោយរបៀបណា ?

☐ ប្រើទឹកធម្មតា ☐ ប្រើជាមួយនឹងសាប៊ូដុំ ☐ ប្រើជាមួយនឹងសាប៊ូម្សៅ

☐ ផ្សេង១ទៀត..

៣៥. តើលោកអ្នកមានសាប៊ូប្រើប្រាស់ដែរឺទេ ? ☐ មាន ☐ មិនមានទេ
(សូមសុំមើលសាប៊ូនោះហើយបញ្ជាក់ថា) ☐ សាប៊ូមាននៅក្នុងផ្ទះ រឺ អត់

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៣៦. តើលោកអ្នកមានពិភាក្សាជាមួយមិត្តភ័ក្ត្ររបស់លោកអ្នកពីបញ្ហាសុខភាព ឬ ក៏អនាម័យដែរឬទេ ?

☐ តែងតែមាន ☐ ញឹកញាប់ដែរ ☐ ពេលខ្លះ ☐ មិនដែលទេ

៣៧. តើលោកអ្នកមានដែលបានទទួលពត៌មានស្តីអំពីបញ្ហាសុខភាព ពីមណ្ឌលសុខភាពដែរឬទេ ?

☐ តែងតែទទួល ☐ ញឹកញាប់ដែរ ☐ ពេលខ្លះ ☐ មិនដែលទេ

៣៨. តើលោកអ្នកធ្លាប់បានចូលរួមសិក្ខាអំពីសុខភាពនៅមណ្ឌលសុខភាពដែរឬទេ ?

☐ តែងតែចូលរួម ☐ ញឹកញាប់ដែរ ☐ ពេលខ្លះ ☐ មិនដែលទេ

៣៩. តើនៅក្នុងផ្ទះរបស់លោកអ្នកមានបន្ទប់ប៉ុន្មានដែរ ?

☐ ១ ☐ ២ ☐ ៣ ☐ ៤ ☐ ៥ រឺក៏លើស

៤០. តើទេះជាផ្ទះរបស់លោកអ្នកផ្ទាល់ឬ ?

☐ បាទ/ចាស ☐ មិនមែនទេ. ជាផ្ទះជួលគេ ☐ មិនមែនទេ. តែយើងមិនបានចំបង់ថ្លៃជួលទេ

៤១. តើលោកអ្នកមានភ្លើងអគ្គិសនីប្រើប្រាស់ដែរឬទេ ?

☐ មាន ☐ មិនមានទេ

៤២. តើលោកអ្នកបានសិក្សារៀនសូត្រដល់ថ្នាក់ណា ?

☐ ថ្នាក់បឋមសិក្សា ☐ ថ្នាក់អនុវិទ្យាល័យ ☐ ថ្នាក់វិទ្យាល័យ ☐ ថ្នាក់មហាវិទ្យាល័យ

- **យើងខ្ញុំសូមអរគុណជាអនេកប្បការដល់ការសហការរបស់លោកអ្នក**