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Entering a Developing Country with a Solar Cooker: Strategies for Start-ups

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Problem Description

This thesis investigates how start-ups can acquire change agents to overcome barriers to adoption when entering a developing country market with a solar cooker.

Preface

This master's thesis is the work of Guro Grytli Seim and Even Haug Larsen. Both authors are pursuing a Master of Science degree at the Norwegian University of Science and Technology (NTNU) School of Entrepreneurship, at the Department of Industrial Economics and Technology Management. The thesis is based on research conducted from January to June 2015.

The master thesis is associated with the Centre for Sustainable Energy Studies (CenSES), which is one of the national research centres in Norway for environment-friendly energy research (FME). Through the CenSES program we were given the opportunity to travel to France and the US to interview case companies within solar cooking. This allowed us to conduct in person interviews, and provided us with a broad and invaluable basis for the case studies.

The target group for this thesis is assumed to have some prior knowledge within the terminology of entrepreneurship, start-ups and diffusion of technology. Even so, most of the applied methods are described in detail, or references for further reading are provided.

We hope and believe that this thesis will help future entrepreneurs to overcome the barriers that are hindering adoption of solar cookers in the industry today.

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Summary

Today, 2.7 billion people rely on biomass as their primary cooking fuel, leading to severe health and environmental impacts in many developing countries. Solar cooking represents a technologically viable alternative to the use of biomass, but scaling up the market has failed despite many years of efforts, mostly by non-profits, donor agencies and governments. Literature shows that there are several barriers to the adoption of solar cookers, where factors such as disruptiveness of the technology, high complexity and low purchasing power impede the adoption rate. With the recent entry of private sector players in this industry, there is a need for better understanding which strategies can be utilized by new ventures in order to increase the adoption rate of solar cookers.

Starting with a literature review, theoretical ideas from diffusion of innovation in conjunction with market entry strategy and context specific literature are examined to investigate the barriers to adoption and the potential tactics that can overcome these barriers. By bringing together these different literatures, change agents are identified as a key resource in overcoming barriers to adoption. This is followed by a multiple case study that firstly investigates the current barriers to adoption, which barriers that can be met with the use of change agents, and thirdly how start-ups in the solar cooking industry can acquire appropriate change agents to overcome barriers to adoption.

This thesis contributes both to theory and practice; Firstly, it contributes to the theory of diffusion of innovation by suggesting that the general definition of an ideal change agent may not be applicable to all contexts. The authors propose that the scope of change agent characteristics potentially should be broadened to some extent when applied to developing markets. Secondly, it contributes to the theory of market entry strategy, as this thesis widens our understanding of the appropriate entry modes for start-ups entering such markets. It suggests that external modes might be preferred for start-ups entering developing markets, due to the high market risk and start-ups' lack of internal resources.

Relevant for practitioners, this thesis recommends start-ups to acquire appropriate change agents through an external change agency that is followed up closely by the start-up. The specific characteristics of appropriate change agents for this context is also suggested, proposing to use female change agents with high status and high local and technical knowledge, that are trusted in the communities. The thesis thus gives a recommendation and a tool kit to start-ups, to help them choose the most appropriate entry strategy. This, the authors suggest, will help the start-up in overcoming barriers to adoption.

With the growing importance of the solar cooking market and its significance especially for the diffusion of environmentally friendly technologies and related impacts, this is a step towards understanding business strategies for complex environments. By proposing specific strategies to overcome barriers to adoption in the solar cooking industry, this thesis contributes towards a better approach to solve a long-standing problem in the sector.

Key words: barriers to adoption; diffusion of innovation; solar cooking; change agent; market entry mode; developing countries.

Sammendrag

I dag benytter 2,7 milliarder mennesker organisk brensel for å lage mat. Dette fører til store utfordringer knyttet til både helse og miljø i utviklingsland. Solkoking er en god, alternativ måte å lage mat på i disse områdene, men bransjen har ikke lykkes med å etablere en forståelse lokalt for dette, til tross for gjennomførte prosjekter gjennom flere år, hovedsakelig av bistandsorganisasjoner og andre ikke-kommersielle aktører. Litteratur viser at det er mange grunner til at solkoking ikke har fått fotfeste som en fullgod måte å tilberede mat på. Identifiserte hindringer er blant annet høy motstand mot å endre den tradisjonelle måten å lage mat på, høy teknologisk kompleksitet og lav kjøpekraft, som til sammen skaper dårlige forutsetninger for endring. Flere kommersielle aktører har nylig gått inn i markedet, og det er nødvendig å undersøke mulige strategier som nye selskaper kan ta i bruk for å øke bruken av solkokere.

Denne oppgaven starter med en gjennomgang av sentral litteratur om utbredelse og spredning av innovasjon og inngangsstrategi i nye markeder, samt litteratur spesifikt om solkokerbransjen. Hensikten er å undersøke hvilke praktiske og holdningsmessige hindringer solkoking møter og mulige taktikker for å møte disse. Litteraturgjennomgangen blir fulgt av en case-studie på hvordan oppstartbedrifter innen solkokerbransjen kan identifisere og engasjere gode endringsagenter som kan være til hjelp for å skape interesse for denne utradisjonelle teknologien.

Oppgaven bidrar til både teori og praksis innen feltet. For det første bidrar den til teori innen spredning og anvendelse av innovasjon, ved å foreslå en utvidet forståelse av hva som kjennetegner en god endringsagent når en skal inn i markeder i utviklingsland. For det andre bidrar oppgaven til teori innen inngangsstrategi i nye markeder, ved at den bidrar til utvidet forståelse for ulike fordelaktige inngangsformer. Oppgaven foreslår at det kan være fordelaktig å bruke eksterne markedskanaler ved markedsinngang i utviklingsland, på bakgrunn av høy markedsrisiko og oppstartselskapers ofte begrensede ressurser.

Det praktiske bidraget i oppgaven er en anbefaling til oppstartbedrifter om å bruke en ekstern partner for å finne gode endringsagenter. Et godt resultat forutsetter imidlertid tett oppfølging av samarbeidspartneren. Oppgaven foreslår også helt spesifikke kjennetegn eller egenskaper som gode endringsagenter i denne konteksten bør ha. Det anbefales å bruke kvinnelige endringsagenter med både teknisk og lokal kunnskap, som har tillit og høy status lokalt. Forfatterne mener oppgavens praktiske tips kan hjelpe oppstartsbedrifter med å finne den beste inngangsstrategien samt å unngå fallgruvene som hittil har vært et problem i bransjen.

Med et stadig økende solkokermarked og dets betydning for diffusjon av miljøvennlige teknologier, bidrar denne oppgaven til bedre å forstå forretningsstrategien for komplekse markeder. Ved å foreslå ulike strategier for å redusere hindringene solenergibransjen har møtt så langt, bidrar denne oppgaven til å finne nye måter å løse et problem som har vært tilstede i denne sektoren i lang tid.

Stikkord: adopsjonsbarrierer; diffusjon av innovasjon; solkoker; endringsagenter; inngangsformer; utviklingsland.

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Abbreviations

CEO	Chief Executive Officer
GACC	Global Alliance for Clean Cookstoves
MNC	Multinational corporations
NGO	Non governmental organization
SCI	Solar Cookers International
UN	United Nations
US	United States
USD	United Stated Dollars

1 Introduction

There is an increasing interest in the potential of markets in developing countries for companies worldwide due to the large untapped opportunities for value creation and profit making (Prahalad and Hammond, 2002, Kolk et al., 2014). The population in these markets is expected to increase with nearly 2.2 billion the next 40 years, revealing even larger market opportunities in the years to come (United Nations, 2014).

A large part of the population in developing markets does not have access to modern sources of energy, and as many as 2,7 billion people today use biomass as their primary cooking fuel (Foell et al., 2011). Cooking with biomass has severe health effects, with up to five per cent of deaths in developing markets connected to indoor smoke pollution (Smith and Mehta, 2003). In addition it contributes to gender inequalities and environmental problems such as deforestation (Foell et al., 2011, Beyene and Koch, 2013). There is thus a need for alternative cooking methods to overcome these challenges.

Clean cookstoves are proposed as a possible solution, and there are now over 160 cookstove projects running worldwide (Ruiz-Mercado et al., 2011, Foell et al., 2011, Otte, 2013). However, research has revealed that the majority of projects within these sectors have had limited success, with low user adoption rate, namely the rate to which a technology is actively being used (Wilkins, 2010; Rogers, 2010). It has also been seen that only a few cases worldwide are showing economic sustainability (Otte, 2013, Simon et al., 2014, Shrimali et al., 2011, Foell et al., 2011).

Increasing the adoption rate has been the main goal for the industry organisation Global Alliance for Clean Cookstoves (GACC) ever since the United Nations (UN) launched the organisation in 2010. The target is adoption of 100 million clean cookstoves by 2020 (Simon et al., 2014). Solar cooking, defined as cooking food with the power of the sun falls into the category of clean cookstoves (SCI, 2014). Investigating adoption of solar cookstoves is in line with the UN's agenda and is thus a highly relevant field of study, given the context.

Lewis and Pattanayak (2012) state that literature on *adoption* of clean cookstoves in developing markets is scattered, and the research within solar cooking is even less developed. A majority of the research is either out of date, such as SCI (1998) and Tucker (1999), or has been conducted on the basis of only non governmental organisations (NGO) cases such as Otte (2013) and Wilkins (2010). An explanation for the lack of research is that historically, the majority of solar cooking projects have been run by NGOs, and commercial actors have only recently entered the industry.

The market for clean cooking is estimated to be 100 billion USD in developing countries, showing large untapped market opportunities for businesses (GACC, 2014). There are only a few commercial actors in

the industry, and entry of more companies is needed in order to meet the UN target. New commercial actors that enter this market need to know how to overcome the barriers to adoption present in the industry. Hence, it is highly relevant to investigate the factors that are currently hindering the adoption rate.

Diffusion of technology, which is seen as how, why and at what rate a technology enters a market, is an established field of literature with roots all the way back to Gabriel Tarde (1903). Since then, Everett M. Rogers has been one of the main contributors to this field since his first version of *Diffusion of Innovation* was published in 1962 and he is now called the father of diffusion of innovation and technology (McGrath and Zell, 2001). However, Rogers' framework has received some criticism, claiming that it is not applicable in all contexts, especially regarding developing markets, because it lacks attention towards the socioeconomic consequences of the innovation (Melkote, 2006, Wüstenhagen et al., 2007). The research that Rogers´s conducted was based on western countries and did not take developing markets' cultural and social conditions into consideration (Bordenave,1976). This is still a challenge, and the fact that 84 per cent of all research on diffusion of technology are conducted in the US and Europe, further suggest that a focus towards developing markets is needed (Rogers, 2010, Batte, 2014).

Objective of the Research

In order to overcome barriers to adoption of a technology, one of the most acknowledged strategies is to use change agents, which can be defined as an individual who influences clients' innovation-decisions (Rogers 2010, Howells, 2006, Shohet and Prevezer, 1996, Bessant and Rush, 1995). Appropriate change agents, with the ideal skill set, are crucial in order to ensure proper adoption of a new technology into a new market (Howells, 2006, Rogers, 2010, Bessant and Rush, 1995). The demanding conditions of developing markets presents particularly challenging requirements related to socio-cultural aspects, where change agents thus can play an important socio-cultural role between customers and change agencies (Calton et al., 2013). How this role should be fulfilled, what the ideal characteristics of such a change agent should be, and whether and how this varies in different contexts is however not well understood (Howells, 2006, Mantel and Rosegger, 1987). The authors aim to investigate this further in the context of the solar cooking industry in developing markets.

Literature suggests that a change agent is a critical resource for start-ups to have in order to ensure proper adoption of their technology. How to acquire these change agents is however a challenge, which relates to the central managerial trade-off between control and the cost of resource commitments (Anderson and Gatignon, 1986). On one hand, going into a new market and attempting to develop this resource internally can be risky because it involves commitment of time and resources, which may or may not pay off. On the other hand, the use of external agents can involve the loss of control over information about customers and the market, and give rise to agency problems (Baek, 2003).

For start-up companies entering developing country markets, the decision on whether to acquire external or internal change agents is even more complicated (Chen and Hu, 2002) Hence, as start-ups are already limited in term of the resources and market power they hold, the resource commitment to develop change agents internally is difficult. In addition, a developing country market which often involves political and economical instability, poor infrastructure, lack of distribution channels, corruption and lack of stable institutions implies large challenges with the loss of control of information that is crucial for success (Schuster and Holtbrügge, 2014, Zerriffi, 2011, Thukral et al., 2008). There is little guidance in the literature for start-up firms in the solar cooking industry on how to decide their internal or external change agents acquisition decision.

Theory of market entry modes, which deals with a framework for deciding whether to acquire internally or externally, provides some guidance on the issue. When entering a new market in general, companies should position themselves through selecting favourable market entry modes (Hollensen, 2012, Ekeledo and Sivakumar, 2004; Kumar and Subramanian, 1997). The theory of market entry mode is developed to help companies find the best suitable strategy for resource acquisition and resource commitments, and it works as a guide for companies that are entering new markets (Zhao et al., 2004). Here, factors such as product complexity, market risk and access to internal resources should be analysed in order to make the right decision (Hollensen, 2012). However, it has been found that small firms often lack the resources and market power of large companies, which makes the complexity of market entry even more challenging (Knight, 2001). When the targeted market is a developing country, the challenge becomes even larger, and there is lack of literature on this topic (Knight, 2001, Kumar and Subramanian, 1997).

Literature on business strategies for Multinational corporations (MNCs) entering markets in developing countries, states that these demanding conditions require a certain set of resources and capabilities that many of these companies do not possess internally (Seelos and Mair, 2007). Particularly the importance of customer knowledge and customer relationship is emphasized, with possible links to the use of change agents (Dahan et al., 2010).

It is suggested that companies must get access to external resources in order to succeed in this challenging market place (Seelos and Mair, 2007, London and Hart, 2004). Acquiring change agents externally could potentially be a strategy also for start-ups in these markets. However, most prior literature has established companies as their focus, and the applicability for start-up companies has not yet been investigated (Kolk et al., 2014, Ansari et al., 2012). There is thus a gap in the literature, which needs further investigation.

Bringing together the issues raised above, namely: the practical imperative of overcoming the challenges to barriers to adoption in the solar cooking industry; the theoretical issues related to characteristics of

change agents required, and if they vary based on context; and the market entry mode decision especially for start-ups entering developing country markets; we ask,

Q: How can start-ups acquire appropriate change agents to overcome barriers to adoption when entering a developing market with a solar cooker?

The authors have conducted a multiple case study where the change agent acquisition strategy of four start-ups in the solar cooking industry has been investigated. Four industry experts have been included to complement and support the findings on requirements for the change agents.

In this thesis a *start-up* is defined as a *human institution* that is designed to deliver a *new product* or service under conditions of *extreme uncertainty* (Ries, 2012), and specifically defined to have less than five years of existence. The term *appropriate* change agent is further defined to be a change agent that fulfils the *characteristics* that are required to meet the barriers to adoption. In other words, the expression involves the personal characteristics they should have in order to conduct activities that will overcome barriers to adoption. *Barriers to adoption* are the factors that are hindering the customers from using a solar cooker in the market today, and these barriers reasons the need for change agents.

The thesis specifically looks at the market entry modes that can allow firms to acquire appropriate change agents, giving a recommendation on to what extent this should be done internally or externally.

The authors' findings reveal key characteristics of change agents that are appropriate for the diffusion of solar cooking technology in developing markets. It was also found that different start-ups use dissimilar strategies to acquire these change agents. Through analysing these different strategies the authors make a suggestion for what strategies that will ensure adoption the best. Secondly, this thesis develops a practical recommendation to increase the success rate of future solar cooking start-ups, and hence take advantage of the large market opportunities, whilst also reaching towards the UN goal of 100 million clean cookstoves by 2020.

Structure of the Thesis

The thesis is structured as follows. Firstly the authors present theory that forms the basis for guiding the research design. Here, the authors present theory on diffusion of technology and market entry strategy. This is followed by contextual literature on barriers to adoption and potential tactics to overcome these. Secondly, the research design itself is presented, which is in the form of a multiple case study. This is followed by a presentation of the case information and analysis. A discussion of the findings in view of theory then follows, based on which the authors make recommendations for start-ups in the solar cooking industry, and propose implications for theory.

2 Literature Review and Initial Construct

In this section the authors are concerned with developing a theoretical basis for understanding how start-ups can acquire appropriate change agents to overcome barriers to adoption when entering a developing market with a solar cooker. To do this, two theoretical streams of literature are referred to. Firstly the authors introduce the theory of diffusion of technology, including this theory's view on potential barriers to adoption and how change agents can help start-ups overcome these barriers. Secondly, market entry strategy is presented, specifically related to the paradox of internalization and externalization, and factors that affect the choice of entry mode. This framework forms the basis for analysing the market entry strategies in the empirical research.

On the basis of these theories the authors develop a theoretically based list of key characteristics of change agents, and a theoretically based framework. The authors then compare this to existing context specific literature to further refine this list, which then forms the basis of the empirical investigation.

2.1 Diffusion of Technology

The established theory on *diffusion of technology* has been successfully used in a wide range of industries (Hsu et al., 2007, Bandura, 2004). Diffusion is defined as *the process by which an innovation is communicated through certain channels over time among the members of a social system* (Rogers, 2010, p. 35). This theory is widely used by business scholars and there has been written over four thousand articles related to this theory. The fundamental question this theory answers is *how, why, and at what rate new ideas and technology spread through cultures* (Rogers, 2010, Folorunso et al., 2010). This could be of large help when discussing how start-ups should enter a new market with a new technology.

Adoption of Technology

When a start-up is diffusing a new technology into a new market, there are often some barriers that must be overcome, before the new technology is adopted by the customer. *Adoption of technology* is a part of the diffusion process and is defined as an active *use* of the technology (Wilkins, 2010, Rogers, 2010). *Barriers to adoption* is defined as factors that impede or hinders such an active use of the technology (Parente and Prescott, 1994). The goal is to overcome the factors that hinder adoption and make customers use the new technology (Ram and Sheth, 1989), which in this thesis is a solar cooker.

Researchers as Wüstenhagen et al. (2007) and Mallett (2013) support the use of this literature for the solar cooking context. They suggest that this literature is particularly relevant when studying micro renewable technology like solar thermal households technologies, due to the marketing challenges

currently being faced. Lewis and Pattanayak (2012) also support this and state that the current projects within clean cookstoves have met challenges concerning technology diffusion. Literature from diffusion of technology is thus relevant for the authors, because through identifying the barriers, the authors can also later identify how to overcome them.

Barriers to Adoption

As mentioned earlier, the father of diffusion of innovation and technology, Everett M. Roger, has been central in developing the framework that forms a basis for the diffusion of technology (McGrath and Zell, 2001). He is the most cited researcher, and his theory is hence central in this thesis. He states that technology generally will be adopted if it is perceived as the best course of action available. There are several potential barriers that can hinder an active use of the technology, and these are listed below.

Table 1. Rogers' framework for barriers to adoption (Rogers, 2010)

Barrier	Description
Low relative advantage	Relative advantage describes the degree to which the individual perceives the innovation as advantageous compared with today's solutions.
Low compatibility	Compatibility describes to what extent an innovation is consistent with the values, needs and practices of the customer.
High complexity	Complexity relates to how well customers understand how the technology works.
Low trialability	Trialability describes to what extent it is possible to experiment with the innovation before really committing to it.
Low observability	Observability is the degree to which customers can observe the innovation in use.

Table 1. above shows five general barriers that can hinder the adoption and use of a new technology. Generally, it can be stated that innovations that are low in complexity and high in all the remaining barriers will be adopted faster than other innovations (Rogers, 2010).

If a company identifies that this is not the case, customers will perceive the technology as risky, and they may delay or forgo the purchase (Sarin et al., 2003). As a result, a stream of marketing research has attempted to identify tactics to reduce customers' perceived risk, in order to overcome barriers to

adoption (e.g., Eng and Quaia, 2009, Frambach et al., 1998, Talke and Hultink 2010). Tactics are in this thesis seen at a company level, defined as a separate action performed by the company within their chosen strategy (Casadesus-Masanell and Ricart, 2010). Here, the tactics are related to what they can do in order to overcome barriers to adoption.

How to Overcome Barriers?

Customers are the ones who ultimately determine the market success of a new product. If customers do not adopt the innovation, diffusion will not occur (Talke and Hultink, 2010). To affect the adoption process in a positive direction, the necessity of communicating with customers is widely acknowledged among marketing and innovation diffusion scholars, where different scholars put emphasis on different activities. The communication can be through word of mouth (Bagozzi and Lee, 1999), a close relationship with customers (Gustafsson et al., 2005) or through *actively* managing the customer relationship to ensure that customers recommend the product to others (Brown et al., 2005). Targeted communication, an active relationship and close cooperation with selected customers can therefore help overcoming barriers to adoption. All tactics thus entail communication with customers as key in overcoming barriers to adoption of a technology.

2.2 The Role of Change Agents

Communicating with customers is a widely acknowledged tactic to overcome barriers to adoption.
For a new company entering a new market can however communication problems emerge. The company may lack cultural understanding, local knowledge and not know the local language, making it difficult for the company to perform the required communication activities to overcome barriers to adoption. The active use of change agents to perform these activities to overcome barriers to adoption is a common tactic that companies can use. The use of change agents is supported by Rogers (2010), Howells (2006), Andreasen (1994) and Wüstenhagen et al., (2007), among others.

A change agent is defined as an individual who influences clients' innovation-decisions in a desirable way (Rogers 2010). The aim of the change agent is to facilitate companies to implement a new technology through influencing customers to change, in other words they work as a catalysts for change (Rogers, 2010, Hagerstrand, 1952). Change agents' broad knowledge and local network is something companies lack when entering a new market, making change agents an important link to the new market of entry (Gatignon and Robertson, 1985). Change agents who have local knowledge and cultural understanding can then communicate with customers on the behalf of the company.

Change Agent Activities

The use of change agents is supported as a common tactic to overcome barriers to adoption. However, there is a need of investigating which activities the change agents should carry out. Rogers (2010) suggests several activities that companies can perform in order to overcome these barriers.

The main activity that change agents should do is to communicate with customers, where the change agents should show customers that the technology is better than existing practices. This can be done through either demonstration, group discussion or training. The change agents should further find the right location or market segment where the relative advantage is the highest and additionally increase the customers' awareness of their needs (Rogers, 2010, Howells, 2006).

Change Agent Characteristics

It is not sufficient to only know what change agents should do. It is also important to investigate characteristics they need to fulfil. Austin et al. (2006) stresses this and states that personal characteristics and abilities of the change agents are especially important in developing countries, due to high market uncertainty. This awareness can help start-ups find the right change agents when entering a developing market. Rogers has listed favourable characteristics for change agents, which is described in Table 2 (Rogers, 2010).

Table 2. Favourable characteristics of change agents (Rogers, 2010)

Characteristic	Description	Why
Local knowledge	Change agents must have knowledge about the customers' needs, attitudes, beliefs, social norms and leadership structure.	Local knowledge helps change agents select what information that is relevant to diffuse to the customers.
Be perceived as trustworthy and credible by customers	Customers should perceive change agents as credible and trustworthy.	The reason for this is that the customer's' perception of the innovation is heavily influenced by the perception of the change agent.
Similar socioeconomic status	The change agent should have similar socioeconomic status as the customer.	This is related to the importance of homophily, where communication is said to be far more efficient when the communicator and receiver are homophilous.

Technical knowledge	The change agent should have some technical knowledge about the technology in order to explain it properly.	Since solar cookers are seen as high in complexity, technical knowledge will benefit change agents so that they can properly help customers in the adoption process.

From the table above it can be seen that change agents should have local and technical knowledge, be perceived as trustworthy and credible, and have similar socioeconomic status as the customer. This knowledge can help start-ups when they acquire change agents, to make sure they acquire the right agents.

One feature about change agents that needs to be noted is the apparent contradiction between homophily and their technical knowledge. Rogers (2010) put heavy emphasis on the importance of homophily between change agents and customers. However, he also claims that they should have technical competence about the innovation. Rogers (2010) acknowledges that this can be seen as contradictory, as technical competence is usually connected with higher education, which would imply that it is socially different from the majority of customers (Rogers, 2010). As of this time, this contradiction has not yet been investigated in the solar cooking industry. It may be an interesting topic, as solar cookers can be regarded as complex products (Otte, 2013), which is further elaborated in the next chapter.

Acquiring Change Agents

Change agents that communicate with customers on the behalf of a company are seen as a good tactic to overcome barriers to adoption. It is further suggested that change agents should do demonstration, training and arrange group discussions, and have local and technical knowledge, be perceived as trustworthy and credible, and have similar socioeconomic status as the customer. Knowledge about the activities that change agents should do and what characteristics they should have, is important for start-ups. However, how to acquire this change agent is challenging, because it requires time and resources to develop internally, and acquiring externally may involve high risk (Hollensen, 2012). A company's ability to acquire resources in general has for decades been considered as significant for their performance (Makadok, 2001, Wernerfelt, 1984, Penrose, 1995).

Rogers (2010) suggest that the best way to acquire change agents is through a change agency. The change agency is locally present and can be a company or organization that knows how to reach out to appropriate potential change agents (Rogers, 2010). The change agent then act as a link or a bridge between the customers and the change agency. The need for a change agent is thus connected to the technical and social chasm between the start-up and the customers. Recent business strategy literature for MNCs in developing markets also supports the use of locally embedded change agencies. Sánchez

and Ricart (2010) and Seelos and Mair (2007) propose that the use of local partners will build trust and ensure acceptance in communities, while also providing customer knowledge to the company. Using partners with local knowledge is seen as key to success for MNCs, and this may also be the case for start-ups entering developing markets with a solar cooker

Figure 1. below shows the steps that a company can do in order to communicate its technology to the customers. The first step is to have contact with a change agency. The change agency will again know how to find appropriate change agents. The change agents can then perform the suggested activities that can lower customers perceived risk and facilitate technology adoption.

Figure 1. Potential model for change agent acquisition

The use of change agents, with appropriate characteristics that perform activities to overcome barriers to adoption, are emphasized by Rogers (2010), Howells (2006) Gatignon and Robertson (1985) and Wüstenhagen et al., (2007). It is also identified that operating in developing countries for a start-up is challenging and change agents can be difficult to acquire. Start-ups therefore meet a strategic dilemma regarding the choice between creating these resources internally or outsourcing it externally. Market entry strategy can be a good scope when analysing the best way to acquire change agents.

2.3 Market Entry Strategy

The internationalization processes of small firms, has attracted increasing attention from the literature of international business (Ekeledo and Sivakumar, 2004, Hollensen, 2012). A specific part of this theory focus on a firm's entry mode decision, and the start-ups' choice of entry mode is of major importance for their success (Ferreira et al., 2013, Laufs and Schwens, 2014).

An entry mode can be defined as an institutional arrangement for organizing and conducting business in a new market (Andersen, 1997, Brouthers, 2013). When entering a new market, companies should position themselves through selecting favourable market entry modes (Kumar and Subramanian, 1997). The theory of market entry mode is developed to help companies find the best suitable strategy for resource acquisition and resource commitments, and it works as a guide for companies that are entering new markets (Hollensen, 2012). In this thesis, the authors are looking at entry modes from a broader perspective, mapping out the differences between external and internal entry modes. Hence, due to the

scope of this thesis, the specific entry modes (e.g. distributor, sales agents etc.) are not elaborated in this thesis.

Some of the internationalization literature is related to entering new countries specifically. However, the authors have only used parts of the literature that are applicable for entering a market. The dissimilarities between markets within one country can be seen as just as large as between different countries, and the authors therefore see the applied literature to be highly relevant.

The Paradox of Internalization and Externalization

As stated, the authors focus on the paradox of internal and external resource acquisition. In this concern, the question a start-up should ask itself is whether it prefers high control with high resource commitments, or low control with low resource commitments (Anderson and Gatignon, 1986, (Brouthers, 2013).

When entering a new market there are three main categories of entry modes, seen in Figure 2 below. Hierarchical modes with a high degree of internalization require large resource commitments in the market of entry. These resource commitments tie the company to the chosen market, and it can be both expensive and time consuming to change market (Sharma and Erramilli, 2004). These modes gives high control but lowers the flexibility due to the resource commitments involved. The other extreme category of market entry strategy is called *export modes,* which has high degree of externalization. Here, the company uses an external partner, which results in less internal resource commitments and lower control. In between these, we find intermediary modes which gives shared control (Hollensen, 2012).

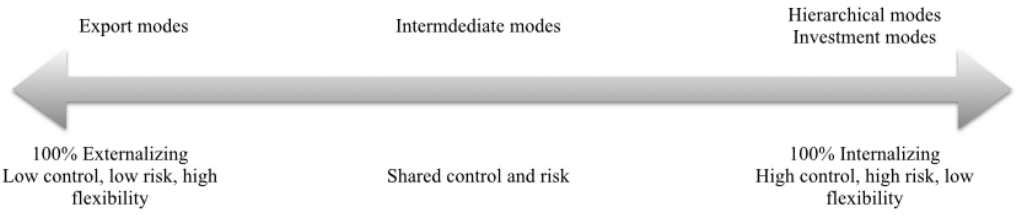

Figure 2. Paradox of externalization and internalization (Hollensen, 2012)

High or Low Control

The most important characteristic used in ranking foreign entry modes is the degree of control, and this is what the authors will focus on (Kogut and Singh, 1988). Kaynak and Herbig (2014) state that companies that enter developing countries wish to protect themselves through keeping some control of operations and management. Terpstra et al. (2012) support this and state that developing countries are

more fragmented, more risky and have less structure, meaning that a 100 per cent export mode with completely outsourcing, may not be preferable.

It is seen that the resource change agent is a suggested tactic for start-ups to overcome barriers to adoption. The correct resource acquisition decision is important because it can be both expensive and time consuming to change (Brush et al, 2001). For start-ups entering a developing market, a change of resource commitment can become both expensive and time consuming (Chen and Hu, 2002). The use of market entry mode literature is thus highly important in order to recommend an appropriate acquisition strategy of change agents.

There is however not *one* ideal market entry mode, and each mode has advantages and disadvantages. When deciding the appropriate market entry strategy start-ups must analyse the different factors relevant for their case in order to decide the best entry mode available (Hollensen, 2012). The factors include both external market factors and internal company factors. Analysing these factors are essential for companies to make sure that they operate in the best way and can enter a new market with success (Doole and Lowe, 2012). The factors in favour of internalization and externalization are here presented, and later utilized for analysing the case companies' strategies.

Factors in Favour of Internalization: (high degree of control)

Table 3. Factors in favour of internalization

Factor	Description
Experience within market of entry	If the company possess knowledge and experience within the market of entry, this decrease the cost and risk by serving a market internally, hence increase the use of hierarchical modes.
High complexity of product	The technical nature of a product affects the choice of entry mode. Products with high complexity require higher expertise in marketing and follow-up work. Marketing intermediaries may not be suitable for handling such work in all markets.
Few available intermediaries	If there are few potential intermediaries or change agents available means small number of alternatives decreasing the chance of finding appropriate ones.

Factors in Favour of Externalization: (Low degree of Control)

Table 4. Factors in favour of externalization

Factor	Description
Small firm size:	SMEs have less access to resources when going into new markets and they cannot do large resource commitments, so they have to accept a lower degree of control. As a firm grows, the available resources increase, and they will be able to increase the degree of hierarchical modes.
Sociocultural difference between home and host market	Markets that have large sociocultural differences may have dissimilarities in for instance business practices, language or educational level. If this difference is perceived as large, the company runs the risk of not operating efficiently in the market, and companies often prefer an entry mode with low resource commitments and high flexibility.
High market risk:	Higher degree of political and economical unpredictability increases theperceived market risk.

The factors mentioned above can help start-ups to analyse if they should decide an internal or external resource acquisition strategy. In the process of identifying an appropriate entry mode strategy, a company can link the factors above together with company characteristics, market of entry factors, and barriers to adoption of the technology being diffused. For instance, a small company diffusing a complex product will be pulled towards an externalization resource acquisition strategy.

3 Barriers to Adoption in the Context of Solar Cooking

Rogers' (2010) suggests that change agents are important for overcoming barriers to adoption. However, he also states that barriers to adoption may vary between technologies. Applying Rogers´ (2010) barriers to adoption framework directly, without information about the solar cooking industry, might be insufficient in such a challenging context. In this section, the authors thus investigate the specific barriers to adoption that are found in the solar cooking sector in developing markets today, by reviewing sector specific literature. This thus develops a preliminary understanding of the barriers to adoptions and solutions currently offered to overcome them.

The market challenges in the solar cooking industry is an emerging field of study, as the majority of former literature within solar cooking have previously only focused on the technical challenges (Lahkar and Samdarshi, 2010, Schwarzer and da Silva, 2008). Foell et al. (2011) identified that projects in the clean cooking industry have failed because they have lacked a focus on social factors such as cultural preferences and local cooking needs (Foell et al., 2011). The few recent publications from solar cooking industry also displays low success rate in existing projects with low user adoption (Otte, 2013, Vanschoenwinkel et al., 2014).

There exists only a limited amount of studies focusing on barriers to adoption in solar cooking industry. The most relevant studies about barriers to adoption of solar cookers have been found to be Otte (2013), Otte (2014), (Vanschoenwinkel et al., 2014), Pine et al. (2011), Blum (1998), Foell et al. (2011), SCI (2014), UNHCR Handbook (2002), Simon (2014), Wentzel (2007) Tucker (1999), MacClancy (2014) and Lewis and Pattanayak (2012). These studies have mostly focused on NGOs and NGO-projects. Their major findings are listed in the table below, using the framework developed by Rogers.

Table 5. Barriers to adoption in the solar cooking market

Barrier to adoption	Applied Literature
Low purchasing power	• Many customers are not trained in the thought of long-term investments, and few have access to excess savings (Otte, 2013, MacClancy, 2014). • In some communities cash and credit may even be new and unknown practices (Lewis and Pattanayak, 2012).
Disruptive cooking method	• The majority of customers have the perception that a solar cooker requires major changes in cooking behaviour. They see problems such as longer cooking time, lower capacity, outdoor cooking and change of taste and texture of the food (Vanschoenwinkel et al., 2014; UNHCR, 2002, MacClancy, 2014). Customers are also sceptical about the reliability. • Lack of knowledge lowers the confidence in the technology (Otte, 2013, MacClancy, 2014)
Technology for the poor	• The majority of solar cooking programs have been designed for users with low socioeconomic status, leading to an image of solar cooking as a technology for "the poor", decreasing the overall value and attractiveness (Otte 2013) (Vanschoenwinkel et al, 2014). • Solar cookers are often not regarded as a modern and advantageous product (Narayanaswamy, 2001).
Lack of industry standards	• Lack of standards of solar cookers has led to an introduction of low-quality products, some of which only have lasted a couple of months (UNHCR, 2002). This has lowered the reputation of solar cookers and the users' perception of the concept (Wilkins, 2010). • Many solar cookers are left nearly unused due to fragility, and this influence potential adopters' perceptions of the technology (Otte, 2013).
High complexity	• Many customers perceive solar cookers as complex and incomprehensible. Many people do not believe that a solar cooker actually can cook (Otte, 2013, Wentzel and Pouris, 2007). • Users with limited food rations have shown to be especially reluctant as they risk wasting their food ration for the day, because they are afraid they will not use the solar cooker correctly (Otte, 2013, UNHCR, 2002).
Low level of formal education	• Households with higher education is more likely to adopt clean cookstoves than other households as they are more likely to see the advantages related to health and environment (Lewis and Pattanayak, 2012). • Education is expected to affect the adoption decision, where especially education of the household head is associated with increased adoption rates (Beyene and Koch, 2013).

The contextual literature suggests the six major barriers to adoption that are listed in the previous section (table 5). The following section links the identified barriers in the solar cooking industry together with suggestions in sector specific literature on how to overcome these barriers. This leads to a suggested set of tactics that companies can choose from. A tactic can be understood as a separate action performed by the company within their chosen strategy (Casadesus-Masanell and Ricart, 2010). The following table presents the barriers and the suggestions to overcome barriers and tactics.

The authors have used the context literature to give recommendations on how to overcome the barriers (what to do), identify how to do it (tactics) and identify what the key characteristics of the change agents are in this sector.

Table 6 Literature's suggestions on how to overcome barriers to adoption

Barriers to adoption	**How to overcome barriers to adoption**	**Required Tactics**
Low purchasing power	• Finance mechanisms as credit channels or microfinance must be provided to customers (MacClancy, 2014, Wentzel and Pouris, 2007, Otte, 2014).	Financing mechanisms as microfinance
Disruptive cooking method	• Give customers knowledge on how they can retain their traditional cooking habits with solar cookers, for instance how they can fry or bake (Foell et al., 2011, Otte, 2013, Simon, 2014, Tucker, 1999). • This knowledge can be achieved with for instance local *female* change agents with *technical knowledge* who provide training and demonstration (Vanschoenwinkel et al., 2014; Kebede et al. 2014, McGilligan , 2014, Wentzel and Pouris, 2007) • The cooker should also allow the individual to continue with daily routine (e.g cooking at night or on cloudy days) (Otte, 2013). This can be done through providing hybrid solutions, where the solar cooker is a part of an integrated solution (Wentzel and Pouris, 2007). • The customers' confidence in the technology can be improved by providing follow-up and maintenance (Wentzel and Pouris, 2007, Kebede et al. 2014, Otte 2013).	**Change agents**: training and demonstration Provide hybrid cooking solutions Follow-up and maintenance
Technology for the poor	• Change agents should increase status of solar cookers. This tactic has showed increased adoption rate in several areas (MacClancy, 2014, Vanschoenwinkel et al, 2014). • Change agents with *higher status* should additionally use solar cookers themselves in their daily life (Otte, 2013; Kebede et al., 2014). Change agents should promote solar cookers as highly *desirable* products that have high quality and high relative advantage (Knudson, 2004, Wentzel and Pouris, 2007).	**Change agents** **Change agents**
Lack of industry standards	• Set industry standards and provide approvals of technologies (Wentzel and Pouris, 2007; SCI, 2014)	Strong industry alliance
High complexity	• Provide demonstrations of solar cookers. This is proved to be one of the most efficient tools to boost sales (Wentzel and Pouris, 2007, SCI, 2014). • Training is a top priority. Change agents should have *local knowledge* to perform training and adapt training materials to local languages (Wentzel and Pouris, 2007, MacClancy, 2014).	**Change agents** **Change agents**

Low level of education	• Provide intensive training, preferably adapted to localization (Wentzel and Pouris, 2007, Beyene and Koch, 2013).	**Change agents**

The table above shows that change agents are the most frequently cited tactic in contextual literature. This is similar to Rogers (2010) suggestions on the importance of change agents in overcoming barriers to adoption. Issues where the role of change agents is not seen as crucial are typically issues where the company is dependent on the institutional environment (e.g. microfinance institutions and industry alliances) and has little control. This supports the authors' choice of focusing on change agents in this thesis.

Summary of Literature Review

Context specific literature has proposed several barriers to adoption. Although this literature is mainly NGO focused, these barriers may also be relevant for start-ups entering this industry, as the barriers are predominantly related to the type of technology. The contextual literature also makes suggestions for how to overcome these barriers and suggests in particular the importance of using change agents in overcoming the barriers. However, it does not comment on how these change agents should be acquired, whether it should be done internally or externally. Other literature on MNCs entering developing markets indicates that this can be done externally. However, the authors want to examine if this recommendation also is applicable for start-ups.

Therefore, the authors conducted a study with the aim of investigating how to overcome the barriers to adoption further. Firstly, the authors investigated if the barriers are the same as in the contextual literature. Secondly, if the suggestions for overcoming them are similar. Here, a special focus is put on change agents and their suggested characteristics. Thirdly, the authors examine start-ups' strategies to acquire these change agents, and based on these strategies, the authors make a recommendation for future start-ups.

4 Methodology

This chapter maps out the methodology used in the research. First the authors describe the overall approach and research design. Then, the process of case selection and data analysis, and finally a discussion on the considerations about the method.

4.1 Case Study Design

The authors used a qualitative approach in this study to investigate how solar cooking start-ups can acquire change agents to overcome barriers to adoption when entering a developing market. A qualitative approach was chosen because it allowed the authors to gain a rich insight into the appropriate characteristics of change agents and describing and analysing the firms' process of acquiring change agents from "the inside" of the firms (Gibbs, 2008).

The research design was a multiple holistic case study of four solar cooking start-up companies. There are three major reasons for the choice of case study design. Firstly, the authors are studying contemporary real-life phenomena where there are few commercial actors in the solar cooking industry and examples of setting up a firm in the sector successfully are not very common. Secondly, the field of study is an underexplored research area (Yin, 2013, Eisenhardt, 1989, Eisenhardt and Graebner, 2007), where theoretical knowledge is still emerging. Thirdly, the research question was of an exploratory manner, with a "How"-type of question, which requires operational links to be traced over time and a wide array of information, which case studies can provide (Yin, 2013). Further, a holistic case study design, with one single unit of analysis with no subunits, was chosen because it allowed a broad investigation of the organisations and their strategies (Yin, 2013).

The authors chose to do a multiple case study design because compared with single case study, it is more generalizable, compelling and robust and it is more likely to produce theory of higher quality (Sagepub, 2015, Yin, 2013). Therefore, as the authors sought to contribute to theoretical ideas, a multiple case study was favourable (Herriott & Firestone, 1983).

The authors followed a literal replication design, meaning that the cases corroborate each other and thus strengthen existing theoretical ideas (Lloyd-Jones, 2008, Yin, 2013). This was possible due to two reasons, first, because the authors had prior knowledge to the field of solar cooking, and second, because they had done a preliminary literature search.

4.2 Case Company and Industry Expert Selection

A set of selection criteria that matched the aim of this study were utilized to find the four chosen case companies. The first set of criteria was that the company had; presence in a developing market, a commercial orientation, was a start-up with less than five years of existence and was providing a parabolic solar cooker. Seven companies matched those criteria. A second set of criteria was that the Chief Executive Officers (CEOs) had been with the company since its foundation, because both retrospective and current information was needed. And secondly, the CEOs had to be available for an interview within the time limits of this study. Based on these case selection criteria, four case companies were treated in this thesis.

Four industry experts were also interviewed to complement the data in relation to the activities and characteristics of change agents. The industry experts were selected based on three criteria; firstly based on recommendations from other industry experts and established companies and NGO´s in the industry. Secondly based on the number of years of experience with entering developing countries with solar cookers. And thirdly, a criterion was that they had hands on experience from the field, and not only theoretical experience. The authors had also seen the selected experts in practise during the industry conference in 2014, and were impressed with their knowledge and industry experience.

The chosen industry experts have decades of experience within the solar cooking industry, and hence provide valuable information on how change agents should be and act in order to overcome barriers to adoption, see Table 8. This historical expertise is seen as an important contribution to our understanding of the phenomena.

4.3 Short Review of Case Companies

Table 7. Case company review

Case company	Information
Company A	**Product portfolio:** Solar lanterns, mobile chargers, clean burning cookstoves and solar cookers. **Number of employees:** Two full time **Number of sold solar cookers:** 900 **Other:** They are mainly selling to end customers, but are still working as a NGO on some community projects. These projects are not included in the thesis. **Interviewed:** CEO
Company B	**Product portfolio:** Solar cookers, solar reflectors, solar lighters, PV chargers **Number of employees:** Four full time **Number of sold solar cookers:** 5000 **Other:** They have a close partnership an NGO whom promote solar cookers in south America and Africa. **Interviewed:** CEO
Company C	**Product portfolio:** Solar cookers, frying pans and solar cooker cover **Number of employees:** Five full time **Number of sold solar cookers:** 2500 **Other:** Started as a NGO, and expanded to other developing markets in 2014, when they increased their focus on profitability. **Interviewed:** CEO
Company D	**Product portfolio:** Solar cookers, frying pans and other cooking equipment **Number of employees:** Two full time **Number of sold solar cookers:** 1500 **Other:** They have a hybrid business model with two different products. One product for developing countries and one for western countries. **Interviewed:** CEO

The table above displays key information about the case companies that form an important basis for the analysis and discussion in this thesis.

4.4 Short Review of Industry Experts

Table 8. Review of industry experts

Name	Organization and title	Years of experience	Geographic expertise	Achievements
Julie Greene	Director, Solar Cookers International	25	Asia and Africa	Engaging with more than 350 individuals and NGOs, and the United Nations on humanitarian project design and technology adoption
David Whitfield	Director, CEDESOL Foundation	13	South America	Have implemented 10K solar cookers in South America
Sophie Brock	Director, Solar Household Energy	11	Asia and Americas	Have implemented 25K solar cookers worldwide.
Patricia McArdle	US diplomat and advocate of solar cooking	30	Asia, Africa and Americas	Three U.S. Department of State Superior Honor Awards

It can be seen from Table 8 that the industry experts have long experience within the solar cooking sector, providing broader experience than the case companies.

4.5 Data Collection

The data was collected by interviews with the chief executive officers (CEOs) of the case companies and industry experts. The authors conducted semi-structured interviews with an interview guide based on open-ended questions, allowing additional information to be presented (Yin, 2013). The interview guide for the industry experts contained questions on barriers to adoption and the required resources to overcome these, with the majority of questions on change agents. The interview guide for the case firms also included a major section on how to acquire change agents. The interview guides can be found in Appendix A.

The authors managed to interview the CEO in all case companies, who were also Co-Founders and thus had knowledge about all the history of the firms. Each CEO and industry expert was interviewed for

approximately 90 or 45 minutes, respectively, giving a total of nine hours of interviews. The authors met three out of four case companies in person, while one case company and all the prominent industry actors were interviewed with "Skype" with audio and video. Skype was used due to lack of sufficient travel funds. All interviews were recorded electronically by a tape recorder and were later transcribed in their entirety. In this thesis, the term *interviewee* will include both case firm respondents (CEOs) and industry experts.

The same author conducted all the interviews in order to achieve reliability, while the second author took notes and observed. The use of the second author as a moderator was seen as especially helpful because of the semi- structured nature of the interview to make sure that all topics was covered correctly. Before the interviews started, the authors gave an introduction to terminology and the sequence for the interview. During the interviews, the authors made sure that the interviewee understood all questions, and explained thoroughly if topics were unclear.

In addition to the interviews, the authors used the case companies' web pages to clarify details that were not mentioned explicitly in the interviews. Later email correspondence was also used to clarify details and ask relevant follow-up questions, and gave the authors all information that was needed to answer the research question. Historical newspaper articles were also used to triangulate the findings in the interviews, revealing some information about the early operations of the companies. An overview over these articles can be found in Appendix B.

4.6 Analysis Method

We conducted an abductive study, using thematic coding derived from theory as the main method of analysis. Firstly, a within- case analysis was conducted for each case, looking at the cases as stand alone entities, that allowed the authors to see patterns from each case emerge (Miles and Huberman, 1984). In this analysis, the firm level was the level of analysis. In the first stage, the authors used fourteen predefined categories, which were based on the literature review. These categories can be found in Appendix C. After the two first case company interviews were coded, the preliminary findings led the authors to define three new categories within the topic of change agent acquisition, to be able to classify all the information. These two interviews were thereafter coded once more. Each transcript were coded twice, once by each author, before comparing codings and finding a common agreement. After the coding, we then analysed the data using Rogers' (2010) change agent framework and Hollensen's (2012) framework on market entry modes. This was done for each case company.

This within-case analysis was followed by a cross-case analysis, comparing the patterns across the cases, where the importance of change agents emerged as a pattern across all cases, and the acquisition strategies were compared, giving cross-case conclusions (Yin, 2013).

The interviews with the industry experts were coded using the sixteen predefined categories and were analysed using Rogers' (2010) framework on change agents. This data complemented the cross-case conclusions from the case firms, resulting in a strengthened cross-case conclusion.

4.7 Considerations About the Method

Some critics have raised concerns about whether a case study has the ability to do scientific generalization (Chetty, 1996). However, as the selected companies are central and leading in the industry and represent a majority of the well known commercial companies, the authors see that the findings have a high level of generalizability for start-up companies with parabolic solar cookers that are entering developing markets. It should ideally have been case companies with experience from similar developing markets, but this was impossible due to the newness of the solar cooking market, as there are not enough start-up companies in the industry today.

Another concern for case studies is the lack of rigor, and the authors therefore focused on following the case study protocol and interview guide systematically. To increase the external validity, to make the research generalizable, the authors used a replication logic concerning interview guides for case companies and industry experts respectively. Construct validity was ensured with triangulation by combining different interviews and contact points and archival documents such as historical newspaper articles. The authors also worked towards constructing a chain of evidence with transcribed, coded and categorized interviews (Gibbert and Ruigrok, 2010, Yin, 2009). The authors used a pattern matching analysis and conducted repeated comparisons between cases, and hence constructed a proper internal validity (Gibbert and Ruigrok, 2010, Cook et al., 1979).

The authors are aware that this could be a challenge for the trustworthiness of the case studies, as the companies might not share all information (Halldórsson and Aastrup, 2003). To account for this, the authors established an interview guide that did not seek to reveal sensitive information from the competitors. The authors' preliminary knowledge can thus rather be seen as a strength for this study, as their network has given them access to valuable interviewees, and as already mentioned, it allowed their literal replication design.

5. Results and Analysis

This chapter summarizes the main results from the case study, divided into three sections. The first section presents the interviewees' perception of the barriers to adoption in the solar cooking industry and how to overcome them. The authors analyse and discuss briefly all barriers in this section, before only two barriers are taken further. The second section confirms the importance of change agents to overcome barriers to adoption, and presents the interviewees' suggestions for an appropriate change agent. This includes the interviewees' proposals on the activities they should be able to perform and the characteristics they should have. The third and last section describes how the case companies acquire change agents and presents the reasons for their strategic choice. Here, the case companies' acquisition strategy of change agents is presented case by case.

5.1 Barriers to Adoption and how to Overcome Them

The authors asked the interviewees (both industry experts and company representatives) an open question about what they perceive as the barriers to adoption in the solar cooking industry, and how to overcome them. The results are presented thematically below, categorized as barriers.

Barrier 1: Seen as Technology for the Poor

On the barrier *technology for the poor*, most of the respondents did not see it as a barrier at all. In fact, the perception was quite the opposite. Surprisingly, Company C stated that their solar cooker customers often showed their cooker to their neighbours because they were so proud. This customer proudness was also supported by similar statements from Company D, Company A, Greene and Whitfield. The authors therefore suggest that contrary to the perception in clean cookstove literature, this is not perceived as a barrier in the solar cooking industry amongst these interviewees. This discrepancy from literature may be because the interviewees work with quality products at a higher price than some of the solar cookers that the NGO focused literature refer to. However, this is an unexpected finding, and may benefit from further investigation in another study.

The interviewees did not suggest any tactics to overcome this barrier because they did not perceive it as a barrier.

Barrier 2: Lack of Industry Standards

On the barrier *lack of industry standards*, all respondents claimed this to be a clear barrier. Company D said that customers have no way of comparing solar cookers to each other, without set standards. Company C stated that: *"The industry must decide criteria for a common label (standard).*" There was a

clear unity from all interviewees that lack of product standards is a barrier, and the authors see that their empirical research suggest that this indeed is a barrier to adoption.

This barrier can be overcome through a strong industry alliance and the establishment of industry standards. This was backed by all of the respondents. Greene added to this and said that they (the industry organization SCI) already have started working on establishing such standards.

Barrier 3: Low Level of Education

Low level of education was not seen as a barrier by most of the interviewees. Company A said that nearly none of the women in their emerging markets have had education, and they have indeed learnt how to use the cookers with training. This was also the case for Company D, as they have trained women where 70 per cent of them were illiterate. Greene claimed that the amount of formal education only influences the time spent on training. This may be because customers with low level of formal education have limited prior experience with the process of learning. The authors see that their data suggests that low level of education is not a barrier, but see that it can affect the time spent on training.

The interviewees did not suggest any tactics to overcome this barrier, because they did not perceive it as a barrier. The interviewees did however suggest that training is an important activity for the customers to learn how to use a solar cooker.

Barrier 4: Low Purchasing Power

All of the respondents did see *low purchasing power* as a barrier. Company D said that a major barrier is that people lack the required funds to acquire a solar cooker. Company C, Brock, Whitfield, McArdle and Greene came with similar statements. The authors hence suggest that this is a barrier that hinders adoption in the solar cooking industry.

The interviewees suggested that this barrier could be overcome through financial mechanisms like microfinance. Brock and Green called microfinance important and Company B even called it a necessity.

Barrier 5: Disruptive Cooking Method

All interviewees mentioned this barrier. Company A claimed that: “Working with cooking is one of the most intimate habits”. McArdle supported this and stated that cooking is an important part of a culture, and that a behaviour change like people’s daily cooking routine is difficult to change. In a majority of developing country markets, fire is the traditional source of heat, and Brock said that people must see a fire in order to understand that it works. Also concerning fire, Whitfield and McArdle said that many

women fear that the food will taste different with the absence of smoke and that their families hence will not like the food. Another concern is that the majority of customers are used to cooking food inside, and moving the cooking outside poses a challenge in many markets. The authors see that the empiry clearly suggest that this is a barrier.

The interviewees suggested that this barrier could be overcome with the use of change agents. Company C, Company A, Greene and McArdle said that change agents should do activities like demonstrations because people must see that the technology works, and they must try it out themselves. Brock supported this and stated that it is very important that people can try out the technology. She brought up a successful model used by the organization "Solar Sisters", where people can try out the technology for a month and return it if they do not like it.

Given that this is perceived as a significant barrier from the interviewees, and one where the role of change agents is seen as crucial, the authors investigate this further.

Barrier 6: High Complexity

The majority of the respondents did emphasize *high complexity* as a barrier. Whitfield stated that it is a clear barrier, because: *"You always need to give training, and the reason why you need training is because the product is complex"*. Company A more specifically claimed that solar cooking can be intimidating and incomprehensible at first. McArdle suggested that some people might be discouraged by the strange appearance of a solar cooker, and think it will make their lives more difficult. This was similar to what Greene said; "The women I talked to are afraid that solar cookers will not work for them". Whitfield supported this and say that women are afraid to be left alone with a non- functional product.

Company C brought up an argument distinct from the other interviewees, stating that their nomadic customers understand the technology more easily than customers in urban areas, as they are more used to living in nature and understanding how the sun is moving. However, the majority of customers are not nomadic, and the authors therefore see the other interviewees' opinions as more relevant here.

The interviewees suggested that this barrier could be overcome with the use of change agents. According to Greene and Whitfield, adoption requires persuasion and a great amount of training from change agents. McArdle further stated that training should be done with neighbours and change agents in open discussions, so that the potential users will dare to share their questions and concerns. This was also shown by company C, where a change agent facilitated natural and informal training between the women. They gave training to the elderly women on how to cook their traditional recipes, which they again shared with the other women when collecting water in the village.

Given that this is perceived as a significant barrier, and one where the role of change agents is seen as crucial, the authors investigate this further.

Barrier 7: High Investment Risk

This was highly suggested by the interviewees as a barrier to adoption, but not mentioned in the literature. The reason for this may either be differences in use of terminology, or that the NGO literature mostly has treated products that have been heavily subsidised or given for free.

According to Greene, the majority of users are vulnerable financially and it is important that they trust that they will get help if something breaks. Brock further stated that many women are afraid of experimenting with a new cooking solutions alone. The women have limited funds and they cannot risk spending their money on a product that they do not know how to use and that could break. Whitfield and Company A also agreed and claimed that women are afraid to be left alone with a non-functional product. McArdle also said that: "It is important to follow up after sales, to make sure that they know how to use the product". The majority of the interviewees suggested that this is a barrier to adoption.

The interviewees suggested that this barrier could be overcome with the use of change agents. Whitfield said that he uses change agents for both sales and maintenance. His change agents have been taught and trained in how to do maintenance and they are given a tool kit that they can use to do repairs. Both he, McArdle and Company C said that the use of change agent teams helps building trust with the customers. McArdle further proposed that this permanent team can provide follow-up, training, conduct periodic demonstrations, solve problems and monitor the usage, and this info can be reported back to the company.

The authors have not derived this barrier further because it is not mentioned in literature. However, the authors recommend further research to investigate and potentially confirm this barrier.

Barrier 8: Unavailability

Unavailability is another that was not suggested by the literature, but highly proposed by the interviewees. Company A stated clearly that "You cannot buy a product that is not available". Brock also addressed this issue, saying that having the cookers available in local stores would improve the adoption. This requires distribution channels that are currently not present. Company C added to this and stated that building out distribution channels has been one of their largest challenges, especially in developing markets where infrastructure, such as roads, is very limited. The industry experts, who have most experience with NGO projects, had less experience and knowledge about this phenomenon, and Brock was the only industry expert mentioning unavailability as a barrier. The NGO focus may also be the reason why literature has not mentioned this barrier before. NGO projects often involve a bulk

purchase, which is distributed and made available for the project participants. Unavailability is therefore not a barrier for NGO projects as it is for commercial companies. This thesis is based on commercial start-ups and issues regarding unavailability are therefore relevant.

Even though there was not a unity regarding this barrier, the authors suggest this as a barrier, since this thesis has a commercial focus. As it has not been mentioned in literature, the barrier is not derived further. However, the authors recommend further research to investigate and potentially confirm this barrier.

The Table below shows the interviewees perceptions on the barriers to adoption in the solar cooking industry linked up with their suggested tactics on how to overcome them.

Table 9. The interviewees' suggestions on barriers to adoption and tactics.

Barriers to Adoption	**Suggested Tactics**
Lack of industry standards	A strong industry alliance and establishment of industry standards
Low purchasing power	Microfinance
Disruptive cooking method	**Change agents**
High complexity	**Change agents**
High investment risk	**Change agents**
Unavailability	Distribution channel

Three of the barriers that the interviewees suggested can be influenced with the use of change agents, and these are marked in bold in Table 9.

5.2 Change Agents

The interviewees recommended change agents as one of the key focus areas. Change agents were the most recurring tactic, found to be crucial for three out of six barriers, where two of these barriers will be taken further. The interviewees used a range of terms for the person that can help overcoming the barriers. They used terms such as training personnel, promoters, community leaders, sales representatives and local representatives. The authors have put all these roles under change agent,

because they fit within Rogers' definition of a change agent, namely *an individual who influences clients' innovation-decisions in a desirable way.* The authors therefore use the term change agent to cover all these roles mentioned by the interviewees.

5.2.1 Change Agent Activities

It was seen in table 9 that change agents could overcome the barriers: *Disruptive cooking method* and *high complexity*. Table 10 below is a summary of the interviewees' suggestions on which activities that change agents should conduct to overcome these barriers to adoption in the solar cooking industry.

Table 10. Suggestions for activities to be conducted by change agents

Suggested Activity	**Arguments from Interviewees**
Demonstrations	Company C, Company B, Greene and McArdle said that demonstration is one of the most important activities that the change agents can do. People must see that the technology works, and they must try it out themselves. Company A stated that; "We could show a video, but only when you can burn your hand and see somebody lighting a piece of paper that bursts into flames, then the technology comes home, then it becomes real to you".
Training	All interviewees emphasized the importance of training. According to Greene and Whitfield, adoption requires persuasion and a great amount of training. As company A puts it; "You need at least a week of using a solar cooker to become professional or in order to become comfortable with it." It is essential with sufficient time for training and trial- and error, preferably in smaller groups in a new community. McArdle further stated that training should be done with neighbours and local facilitators in open discussions, so that the potential users will dare to share their questions and concerns. This was also shown by Company C, who facilitated natural and informal training between women. They gave training to the elderly women on how to cook their traditional recipes, which they again shared with the other women when collecting water in the village.
Follow-up and maintenance:	All interviewees stated that follow-up and maintenance is an essential activity for adoption. If parts on the product gets damaged and not repaired, the product will stay unused, and adoption is stopped. If users fail to use the product or is

	dissatisfied, this can spread to other potential users. Whitfield is one of those that focus on maintenance team, and he has combined this with the sales team. His representatives have been taught and trained in how to do maintenance and they are given a tool kit that they can use to do repairs. He said the use of a permanent team helps building trust with the customers, and this was supported by McArdle. She proposed that this permanent team can provide follow-up training, conduct periodic demonstrations, solve problems and monitor the usage.

5.2.2 Change Agent Characteristics

Table 10 above presented that demonstration, training, group discussions and follow-up are activities that change agents can perform to overcome barriers to adoption in the solar cooking industry. The interviewees also suggested some important characteristics that change agents should have in order to best facilitate customers adoption process. These are shown in Table 11 below.

Table 11. Suggested change agent characteristic

Characteristic	Description
Local knowledge	All interviewees emphasized the importance of *knowing* the customers as a core characteristic. Local knowledge let the change agents know the customers' needs, what value propositions to emphasize, and how the company can adjust to this. **Culinary Knowledge** Culinary knowledge was mentioned as one of the most important characteristics, where for instance Whitfield, Company D and Greene said the change agents must know the local way of cooking. **Physical Attributes of the Location** Company A and Brock said that the change agent must have knowledge about the appropriateness of the geographical location, such as sun conditions and that they should know the customers' housing. This was shown in an example where cooking outdoors was a challenge because they did not want their neighbours to see what they were cooking. Adapting to this, Company C made courtyard barriers around their outdoor space.

Trusted person	A change agent should be a trusted person in the local community, for instance a community leader. Particularly Company A, Company D, Brock, Greene, and Whitfield emphasized the significance of using change agent that people trust, and Company A specified that similar ethnicity and accent is important to ensure trust.
Female	McArdle, Whitfield and Company C and Company D stated that female change agents are most successful. In many of the interviewees' projects, the use of female promoters has been very successful, as the target group is mainly women.
Technical knowledge	Company A, Company D, Greene, McArdle and Brock stated that change agents must have extensive knowledge about the technology. Company A put particular emphasis on this. The technology is still very new and it is important that the promoters have enough knowledge about how the technology works, being able to answer all questions.
High status	Greene, Whitfield and Company A said that change agents should have higher status in order to create an aspirational feeling, and to make the impression of the technology as a step-up for the customers. For instance Greene emphasized that someone you look up to should use a solar cooker, or in her own words; "We want to be equal to who are perceived better." Company A exemplified this and stated that gardeners are influenced when they see their "boss" using a solar cooker.

The results suggest that start-ups should get access to female change agents that have local and technical knowledge, and that has both trust and high status in the community. They should be able to have training and demonstrations and follow up customers.

5.3 Acquiring Change Agents

The authors have identified six barriers that are found to be the most recurring and uodated within the solar cooking industry. The authors have also named the activities that change agents should do and what kind of characteristics they should have to help companies overcome these barriers. The authors found that while the use of change agents is important for all case companies, the way to acquire change agents may vary between companies. Some do it entirely internally in the sense that they develop their own employees as change agents, while others may use external agents or agencies (organizations or individuals) or a hybrid approach. The authors present these different approaches case by case below.

In order to visually represent the approaches, the authors have used a diagram to visually present and compare how the companies acquire change agents.

5.3.1 Company A

Company A is doing all change agent activities internally, using their own employees. They are not using an external change agency, but is rather acting as both a change agent and a change agency.

Their reason behind this is that the solar cooking market is very new and that external parties have limited knowledge about the solar cooking technology. Nevertheless, Company A admit that their current strategy is very challenging as they only have two employees. They stated that they cannot do activities such as follow-up due to their resource constraints. They are also facing challenges when they are entering new communities, as they often do not know the local norms and traditions. Of this reason, Company A stated that they are planning to use external change agencies later, but they have not yet found any appropriate partner. Firstly, they are going to develop a network of change agents that they will find through their own network.

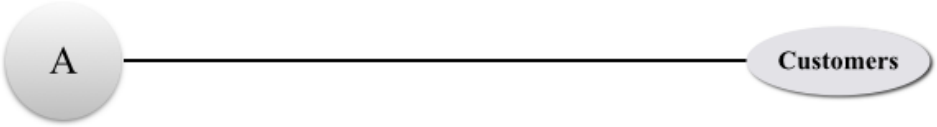

Figure 3. Company A's strategy today: conducting all change agent activities internally

Figure 4. Future's strategy: Use external change agents that can keep contact with the communities.

5.3.2 Company B

Company B uses a NGO as a change agency, which further find change agents. They are exclusively using this external partner, and Company B is only entering the countries where this specific NGO is present. Company B is not particularly involved in how they operate.

Company B stated that one of the main reasons for this distant relationship to the change agency is to generate sales and speed up their market expansion. They claim to have limited time for meetings with the NGO, and Company B seems to follow up the NGO to a minimal extent, completely trusting the expertise and activities of the NGO. On questions related to the adoption process, it appeared that the company was not knowledgeable about the process at all. They are not certain about the NGO´s technical knowledge about their product, nor are they sure what activities that are being conducted in the market they are entering.

Figure 5 below shows that Company B find change agents through a change agency. The link with this change agency is however not strong, where the change agency can be said to nearly operate independently, shown with a dotted line.

Figure 5. Company B's acquisition strategy

5.3.3 Company C

Previously, Company C did nearly all activities internally. They were operating as a change agency and their employees were taking the roles as change agents. This is a similar strategy to what Company A is doing today, shown in figure 3 above.

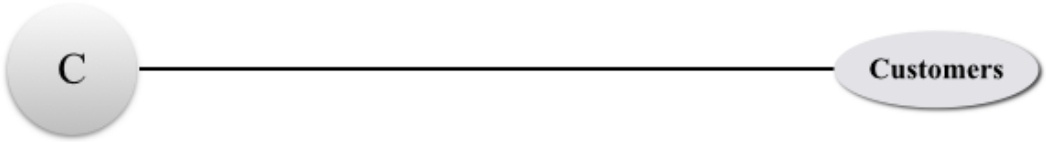

Figure 6. Company C's former acquisition strategy

Company C used to do be their own change agents because they thought their employees where the most capable to explain the technology. However, they stated that this strategy became risky and they almost went bankrupt. They were completely dependent on one market, and their commitments made it difficult to expand into other markets in order to reach scale. Due to these reasons they changed their strategy in 2014, and they expanded into developing markets in Latin America and Asia. Today they use commercial partners that act as their change agency, who are taking the responsibility of finding local change agents, see figure 7 below.

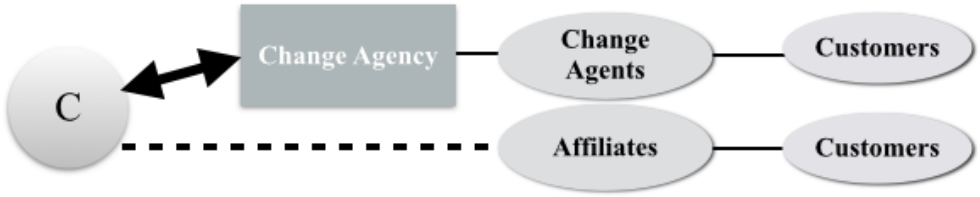

Figure 7. Company C's strategy for acquiring change agents today is to use an external change agency

Company C stated that they always spend time on finding a change agent. They focus on finding a local change agency who has a deep understanding and caring for their customers' needs. Company C is very conscious about how their change agents are operating, and they have knowledge about the adoption activities happening in the field. They stated that they make specific agreements with the change agencies where they agree on having demonstrations and provide the necessary training, where they for instance arrange cooking classes where potential customers can participate before purchasing a solar cooker.

In addition to change agencies, Company C has recently started an affiliates program in which excited customers get commissions on sales, making them an extension of their sales channels, and the affiliates can thus be said to be change agents. They are not employed by Company C, but they are in directly contact with the company, and Company C has thus quite good control over the affiliates.

5.3.4 Company D

Company D is using external change agencies to get access to change agents, and this they are doing in all markets of entry. However, it is important for Company D to facilitate the adoption process, so they follow up their change agencies closely. Company Ds' employees speak French, and they are exclusively entering French speaking markets, and Company D says that this helps them building a close relationship with the change agency. Company D stated that they thus combine their own experience and international network with the change agency's local customer knowledge. They called this an ideal combination and claimed that it creates great synergies and a win-win situation for both organizations.

Company D prefers to work with NGOs because they do not ask for exclusivity on their products, but they also see great value of working with private companies because they have a broader network compared with NGOs. They find the change agency both through their own network and through Internet and exhibitions. In contrast to Company B, Company D use a different change agency in each market of entry, finding the most appropriate change agency for each market. They use both time and resources on screening the new change agencies.

In order to find the appropriate change agents, the NGO cooperates with the local community in the process of finding the best-suited change agents. Company D is overlooking this process and give them advice to ensure that the adoption process is properly taken care of. Company D's strategy can be seen in figure 8, showing that they have a close link with continuous follow-up with the change agency.

Figure 8. Company D's change agent acquisition strategy is to use an external change agency which they follow-up

5.4 Summary of Case Companies' Change Agent Acquisitions

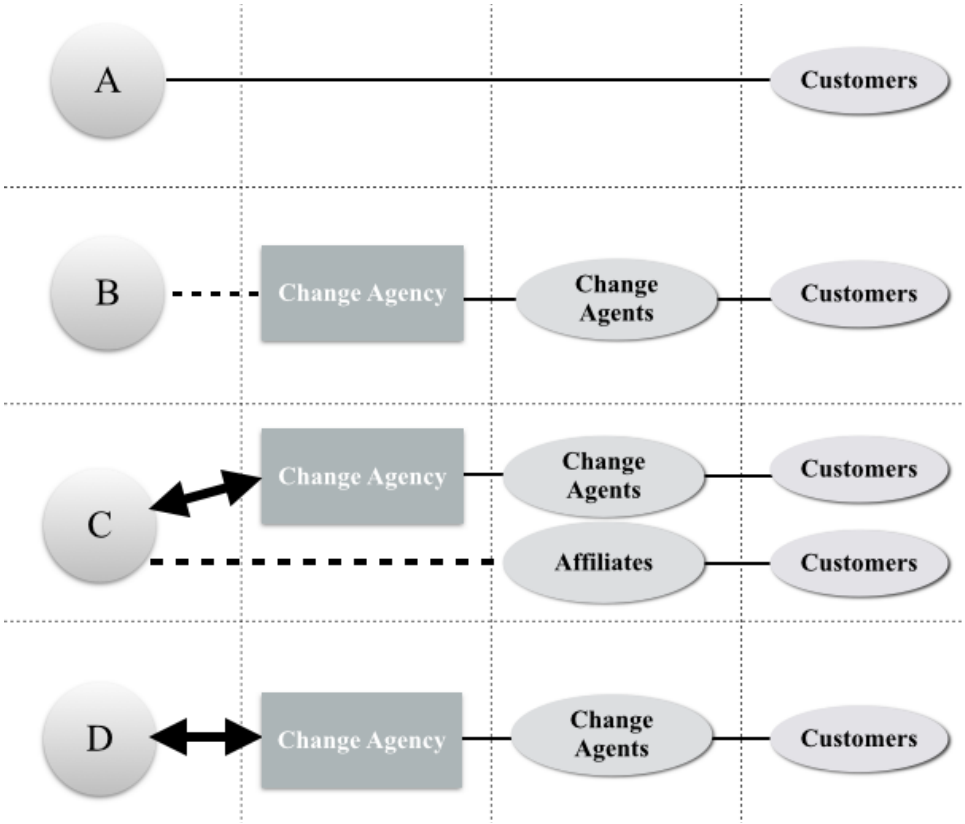

Figure 9. Case companies and their different strategies for acquiring change agents.

In this chapter the authors firstly presented the findings related to barriers to adoption in the solar cooking industry. Secondly, the details of appropriate change agents were mapped out. The empirical data suggested that change agents should do demonstrations, training, group discussion and follow-up. In order to conduct this in the best way, change agents should be female, have local and technical knowledge, and have both trust and high status in the community.

Thirdly, the case company's acquisition strategy of change agents was presented. Concerning acquisition of change agents, the authors found that three out of four companies acquire change agents using an external change agency. The proximity between start-up and change agency was seen to vary significantly between the case companies, and the companies had differing control over the activities that change agents should do and how the change agents should be. Two case companies were found to follow up their external change agencies closely, by committing resources to find the right change agents and sharing technical knowledge.

In the next section, the authors analyse, discuss and compare the theory and findings.

6. Analysis and Discussion

This study set out to discover how start-ups can acquire appropriate change agents with a particular focus on the paradox of internalization and externalization. In this chapter, the authors compare the presented results with former literature and theory. The contributions and implications of the study is thereafter thoroughly discussed and displayed.

Firstly, the authors compare what context literature and findings have suggested as the barriers to adoption in the solar cooking industry. The authors start with a brief discussion surrounding the most interesting findings, before the two barriers *disruptive cooking method,* and *high complexity* are discussed in depth.

Secondly, the authors present the findings and implications of the *activities* that change agents should conduct. Then the suggested *characteristics* from literature and interviewees of change agents will be linked together.

The third and last section includes the discussion of how the case companies *acquire change agents*, firstly discussing case by case. Each case company is analysed with the use of market entry theory, and their strategies are categorized in relation to their level of externalization and internalization. Their change agent acquisition strategy is further linked with how well the companies meet the suggested characteristics that the change agents should have. Finally, the authors present an initial construct for a recommended acquisition strategy for start-ups entering a developing market with a solar cooker.

6.1 Barriers to Adoption

Chapter 5 showed that the interviewees' perceived the barriers to adoption to be *lack of industry standards, low purchasing power, disruptive cooking method, high complexity, high investment risk and unavailability*. On the contrary, they did not see t*echnology for the poor* and *low level of formal education* as barriers, even though suggested by the context literature. The authors therefore suggest that Narayanaswamy (2001), Vanschoenwinkel et al (2014) and Otte (2013), who state that solar cookers are seen as technology for the poor, and Lewis and Pattanayak (2012) and Beyene and Koch (2013), who stated that low level of formal education is a barrier to adoption, may need to be revised.

Due to the scope of this thesis, the authors in the following discuss the barriers that were mentioned by theory, context literature and results, and that can be overcome with the use of change agents. These were found to be *disruptive cooking method* and *high complexity*.

Disruptive Cooking Method

Theory, context literature and findings agree that solar cookers are a disruptive cooking method and a barrier to adoption. Disruptive cooking method is related to Rogers´(2010) term low compatibility, meaning low consistency with values, needs and practises of the customer. According to Vanschoenwinkel et al. (2014) and UNHCR (2002) the majority of customers has the perception that a solar cooker requires major changes in cooking behaviour. This was confirmed by all the interviewees, where the majority stated that many users do not see the technology to fit with their daily life. They claimed that cooking outside with the sun is a major shift from their current way of cooking, which often is inside with a fire. This lack of fit with daily routines was also clearly shown by McArdle who stated: "*It's a complete shift from your traditional cooking manners*". It was further claimed that many women fear that food will taste different with the absence of smoke and that their families hence will not like the food.

It can therefore be clearly seen that disruptive cooking method is a barrier to adoption. This is a reinforcement of both theory and context literature. Change agents can decrease this barrier, but as the interviewees said, changing cooking habits do not change overnight.

High Complexity

High complexity relates to how well customers understand how a technology works. Generally, it can be stated that innovations that are high in complexity will be adopted slower than other innovations (Rogers, 2010). The contextual literature suggested that many customers perceive solar cookers as complex and incomprehensible, and that the lack of knowledge further decreases the confidence in the technology (Otte, 2013; Wentzel and Pouris, 2007; McGilligan 2014). With the exception of Company C, this barrier was clearly acknowledged by all interviewees. Company C brought up an argument distinct from the other interviewees and stated that their nomadic customers actually understand the technology more easily than customers in urban and developed areas, as they are more used to living in nature and understanding how the sun is moving. This is interesting, as it shows that customers' perception is heavily influenced by their culture and background, suggesting that it is crucial that start-ups acquire local knowledge about their customers. However, the authors chose not to focus on Company C's argument, as most customers are likely not to be nomadic, and all other interviewees clearly perceived this as a barrier.

The authors therefore see that high complexity was perceived to be a barrier, and the literature is reinforced. Findings also showed that all interviewees suggested change agents as the resource to overcome these barriers.

Several activities for the change agents to conduct have been briefly mentioned to be important in overcoming these two barriers. These suggested activities are presented, analysed and discussed in the next chapter.

6.2 Change Agents

Change agents were confirmed by all interviewees to play a crucial role for proper adoption of solar cookers. This chapter first discusses the activities that change agents should conduct, linking diffusion of technology theory with contextual literature and case findings. To be able to conduct these activities, the change agents must fulfil several characteristics, and a discussion on this hence follows after the activities have been presented.

6.2.1 Change Agent Activities

Table 11 compares Rogers' (2010) theoretical framework, context literature and case results concerning what activities change agents should conduct. If there is a correlation, the authors label the contribution to the activity as reinforced. If the context literature and empirical data suggest a new activity, it is marked as "new".

Table 11. Comparison of suggested activities from diffusion of technology theory, context literature and case results

Rogers' (2010) theoretical framework	**Context literature**	**Case results**	**Contribution**
Demonstration	Demonstration	Demonstration	Reinforced
Training	Training	Training	Reinforced
None	Follow-up and maintenance	Follow-up and maintenance	New

The authors in the following discuss these activities to investigate the implications for the characteristics of the appropriate change agents.

Demonstrations

Talke and Hulting (2010) discussed the importance of communicating with your customers to affect the adoption process in a positive direction. This is widely acknowledged among marketing and innovation diffusion scholars, and a variety of activities can be used to reach those goals. Context literature suggested that demonstrations can overcome the barrier of high complexity (Wentzel and Pouris, 2007, SCI, 2014, MacClancy, 2014). This is connected to Rogers' (2010) term "Observability", in other words, to what extent the customers can see the innovation in use. Rogers (2010) claims that higher observability increases the rate of adoption, and this is heavily supported by both the context literature and the case results in this thesis. Demonstrations were mentioned as a *crucial* activity for the change agents to conduct, to ensure adoption of solar cookers. All case companies mentioned this activity in the open-ended questions. The importance is exemplified by what CEO in Company A stated: "*Customers must see that the technology works, they must feel the heat before they understand how powerful the technology is*".

The authors thus suggest that demonstrations of solar cookers should be a mandatory activity that change agents should conduct in order to overcome barriers to adoption in the solar cooking industry.

Training

Contextual literature suggested training as an important activity. Foell et al., (2011), Otte, (2013), Simon, (2014), Tucker, (1999) particularly emphasised the importance of helping people to know how they can retain their traditional cooking habits with solar cookers. This knowledge can be achieved through training, and this was stated to be one of the most important activities to provide (Vanschoenwinkel et al., 2014; Kebede et al. 2014, McGilligan , 2014, Wentzel and Pouris, 2007). The need for training is in line with Rogers' emphasis on trialability, namely the importance of giving customers the possibility to try out the technology. This is tightly connected with the perceived complexity and lack of intuitiveness that authors like Otte (2013) and McGilligan (2014) have previously identified. The importance of training was also confirmed by the interviewees, where Greene and Whitfield stated that adoption of solar cookers required persuasion and a great amount of training.

Rogers' (2010) also suggest customer groups as a particular type of training, where they can interact both with each other and with the change agent. Group discussions will clearly increase the amount of communication, and hence the adoption rate (Wüstenhagen et al., 2007). From the results, it was stated that informal and open group discussions are just as important as formal arranged meetings. Company C said that users need to have interaction with other users and says: "The customers want info from other users and customers, not from the solar cooking companies".

The authors suggest that training, including group discussions, is an important activity that change agents should perform. Both diffusion of technology theory, context literature and the interviewees agree to this.

Follow-up and Maintenance

Rogers (2010) does not include follow-up as a change agent activity. However, the findings in this thesis strongly suggest that customers should be followed up by the same representatives throughout the innovation process because this will increase the trust with the customers. Additionally, if a change agent can guarantee the customer follow-up, the customer's fear of being left with a non-functional product will decrease. All interviewees emphasized this activity, the only exception was company B that had not previously given thought to this. The authors suggest that follow-up activities in solar cooking should be conducted by change agents, and that it will decrease the customers' uncertainty, and hence increase the adoption rate. The importance of follow-up and maintenance was also emphasized by Wentzel and Pouris (2007) and Kebede et al. (2014) in the contextual literature.

The authors suggest to expand Rogers´(2010) definition of change agents to also include follow-up when it comes to the solar cooking industry.

6.2.2 Characteristics of Change Agents

Last subsection suggested that demonstration, training and follow-up are important activities that change agents must conduct to overcome barriers to adoption. As previously mentioned, in the context of developing markets, it is of particular importance that the personnel in the field fulfil the appropriate characteristics. The characteristics from diffusion of technology theory and contextual literature are compared with the case findings in Table 12 below.

Table 12. The characteristics from diffusion of technology theory and contextual literature compared with the case findings.

Rogers' Framework	Context Literature	Case Results	Contribution
Local knowledge	Local knowledge	Local knowledge	Reinforced
Trustworthy and credible	Not found	Trusted person	Reinforced
Similar socioeconomic status	Female	Female	Specified
Similar socioeconomic status	High status	High status	Contrasting

Technical knowledge	Technical knowledge	Technical knowledge	Reinforced

The characteristics that are similar between all three sources are called reinforced, and these will not be discussed further. The authors will however discuss the characteristics **female** change agents and **high status**, which was specified or contrasting.

Female Change Agents

The contextual literature showed that having female change agents is of significant value (Vanschoenwinkel et al., 2014; Kebede et al. 2014). This was also heavily emphasised by the interviewees, where Company D and Whitfield almost exclusively teach women to be change agents due to the great results this has given. It appeared that female change agents decreased the users' fear of asking questions, which further decreased their uncertainty and increased the adoption rate. The term *users* is here utilized instead of customer, because the customer is not necessarily a female. In some families, the man is the decision maker and hence the customer, whereas the women is the end user.

Roger (2010) states that adoption of innovations is positively correlated to the change agents' homophily with clients, primarily that a similarity with users enables better communication. As most customers are women, the homophily is increased when using female change agents, in line with Roger's recommendation. This result is a contribution because it shows the applicability of Rogers' framework in the solar cooking market, and it specifies one type of homophily that is of particular importance in this market.

High Status

The results showed that having change agents with high status was is an important characteristic, and all interviewees suggested this characteristic. It was preferred in order to create an aspirational feeling, and to make the impression of the technology as a step-up for the customers. Greene also emphasized that someone you look up to should use a solar cooker, or in her own words: *"We want to be equal to who are perceived better."* This is seen as especially important in low-income markets because it is important to avoid the impression of being poor. To some extent, it was also suggested by contextual literature (Otte, 2013; Kebede et al., 2014). However, this is contrasting with Rogers' framework, where Rogers' emphasis on a high degree of homophily is not consistent with the change agents' having a higher status. The challenge is to find the right balance between homophily and high status that is appropriate for the location.

Concluding Remarks on Characteristics of Change Agents

It has here been shown that start-ups should have access to female change agents with technical knowledge, and that they should be both trusted and respected in their communities.

The start-up and change agency must balance the fine line between homophily and heterophily. Rogers suggests homophily to be predominant, however the case results shows the importance of heterophily when it comes to high status. The authors therefore suggests that change agents' characteristics should lean more towards heterophily than what is originally suggested by Rogers' (2010) framework, when it comes to the solar cooking industry in developing markets.

Suggested characteristics from this thesis on how change agents should be and what activities they should conduct are presented in Table 13 and Table 14 below.

Table 13. Suggested change agent activities

Activities	Demonstration	Training and group discussions	Follow-up and maintenance

Table 14. Suggested characteristics of appropriate change agents

Characteristics	Local knowledge	Trusted person	Female and similar ethnicity	Technical knowledge	High Status

6.3 Acquiring Change Agents

The last section presented and discussed the activities and characteristics that change agents must fulfil in order to overcome barriers to adoption in the industry today. This section look at how start-ups should acquire these appropriate change agents.

Acquiring resources like change agents is a challenging task, especially in the demanding conditions of developing markets (Seelos and Mair, 2007, Knight, 2001, Kumar and Subramanian, 1997). Rogers (2010) suggests to acquire change agents through a change agency, but there is however a lack of research on the applicability of Rogers´ (2010) theory in developing markets (Melkot, 2006). Kolk et al. (2014) and Calton et al. (2013) suggest that companies that enter developing markets should acquire change agents through partnerships, however, this research is not related to start-ups. Section 5 presented the acquisition strategies of the case companies, and this section analyses and compares this further.

The Paradox of Internalization and Externalization

The major case findings showed that there was an inconsistency regarding internal versus external acquisition of change agents. The case companies mentioned both advantages and disadvantages of their choice of market entry strategy, and the authors recognized that start-ups need a framework for deciding such a crucial decision as their resource acquisition strategy. Of this reason, this section first starts out with a market entry mode analysis for this context, analysing the factors that pull start-ups with a solar cooker in developing countries towards internalization and which factors that pull towards externalization. Secondly, the authors map out the case company strategies related to this paradox.

According to Hollensen (2012), both internal and external factors should be analysed when deciding between an internal and external entry mode strategy. Some of these factors may be similar to all start-ups entering a developing market with a solar cooker, whereas others will vary relating to factors internal to the company and external factors related to the specific market of entry. The authors use Hollensen's (2012) factors to analyse the market entry modes in the following section.

Due to the scope of this thesis, some factors will always be present. Firstly, this thesis looks at start-ups, and this implies that the company size is small, and the resource constraint involved pushes towards externalizations. Most developing country markets involve high risk, which thus suggest that resource commitments can be both risky and costly, resulting in a push towards externalization. The investigation on the barriers to adoption further suggested that solar cookers are perceived to involve high complexity, which push towards internalization. This would then imply that a total externalized or internalized entry mode is not recommended in the solar cooking industry in developing country markets.

There are also some factors that will vary between start-ups and markets (Hollensen, 2012). If the company has *low level of experience with the market of entry* and there is a *high sociocultural difference* between home and host market, the company should place themselves towards externalization. If it is rather the contrary, then they should choose a strategy closer to internalization. The same can be said about the *availability of intermediaries*, where few available intermediaries pull towards internalization.

Figure 10 shows the factors that influence the choice of strategy specifically for the solar cooking industry, where the authors' suggestion for invariable and variable factors are shown.

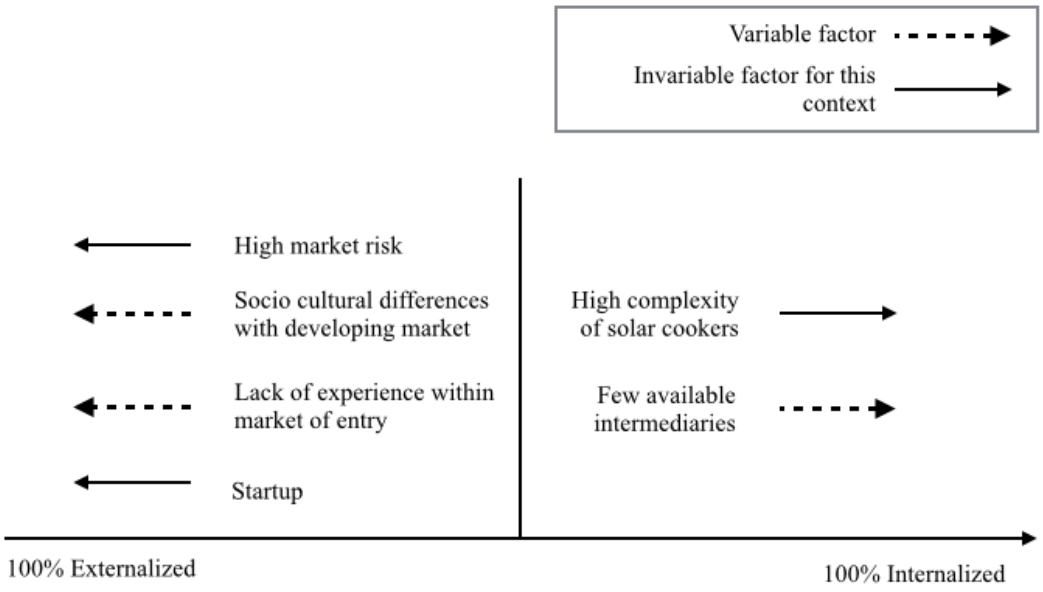

Figure 10. Factors that influence entry mode choice in the solar cooking industry

From the figure above, it can be seen that four factors pull towards externalization and two factors pull towards internalization. There will always be a difference in the degree of pull, but analysing figure 10 gives a theoretical suggestion to where a start-up should position it selves when deciding its change agent acquisition strategy.

Analysis of Entry Mode Decision

Last section provided a theoretical analysis of the solar cooking industry. This section presents an analysis and explanation of how the *case companies* acquire change agents in relation to this paradox. The authors utilize the factors already presented to build reasoning behind their choice of entry mode.

Company A

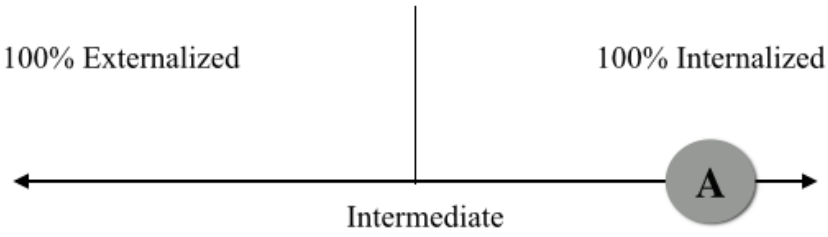

Figure 11. Company A's type of entry mode

Company A is acting as both a change agency and as change agents, and this place them to the utter right on the paradox. Company A stated that this is reasoned mainly by the lack of available change agencies with sufficient technical knowledge about solar cooking. This can be connected with two market entry factors in favour of internalization namely *few available intermediaries* and *high complexity of products* (Hollensen, 2012). Company A stated that they think they have sufficient market experience to do the change agent activities internally, which to some extent reasons their choice of an internal mode (Doole and Lowe, 2012). However, Company A admitted that they lack resources to do all the suggested change agent activities, and that they not always have the required knowledge to enter communities in the best way. This might insinuate that a different type of entry mode would serve Company A better.

Company B

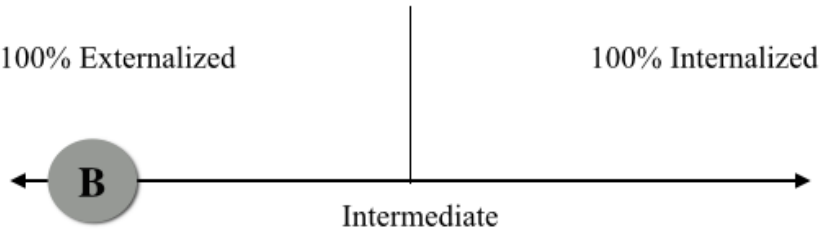

Figure 12. Company B's type of entry mode

Company B is using an external change agency that is responsible for all the adoption activities in their new markets and this places them towards the far left. Connected with the theory on market entry strategy, it seems like they perceive the *sociocultural differences* between their home and host market to

be large, and the countries they enter to be risky (Hollensen, 2012). Partnering up with an NGO that has local knowledge and experience in the emerging markets, means that Company B has low resource commitments in these market and hence high flexibility and low risk. At first sight, this can appear to be a wise strategic choice. However, this high degree of externalization contrasts both Kaynak and Herbig (2014) and Vern et.al (2012), who state that this high degree of externalization and low control is risky in developing markets, where companies should have some control over operations.

Company C

For the first two years, Company C worked almost exclusively in their home country with a high degree of internalization. Using market entry theory from Hollensen (2012) and Kumar and Subramanian (1997), they probably perceived their team to have broad experience within this market. Internalization was also reasoned by the factor, *few intermediaries available*. As Company C was the first solar cooking company in their first market of entry; this newness of solar cookers limited the availability of appropriate external change agencies. They also had a large team, allowing them to allocate employees to tasks that otherwise could have been done externally. The latter is connected with the factor that larger companies tend to do more internally (Sharma and Erramilli, 2004).

The authors interpret that these factors made Company C decide that internalization was most appropriate. This strategy resulted in very high control over their activities, but their large resource commitments gave low flexibility. Company C experienced this in real life. External market factors suddenly changed, which almost caused them a bankruptcy.

It is interesting to see how Company C´s resource acquisition strategy changed. Since 2014, they have rather used external, local change agencies to acquire change agents. They are currently entering many markets simultaneously, and therefore they cannot have international experience in all markets. In addition, they don't see the markets they now enter as high risk, so this defends having external resource commitments. They have moved across the axis of entry mode, from doing all activities internally, towards using a more external approach today, see figure 13 below.

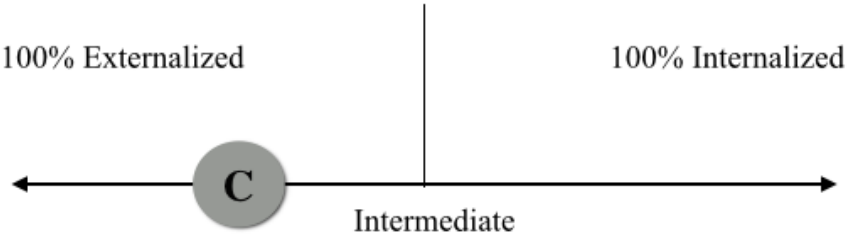

Figure 13. Company C's type of entry mode

Company D

The findings showed that Company D uses external change agencies, but they are sharing their technical expertise and following up with the external agency closely. They perceive the socio cultural differences to be moderate, because they only enter countries with the same language as their home country, which is why they have some resource commitments in their markets. This allows them to have communication and follow-up of the change agency. They do not have particular experience within the markets they enter, reasoning their choice of an external type of entry mode. The authors categorize Company D to use a type of entry mode between externalization and internalization, close to having an intermediate approach, see Figure 14.

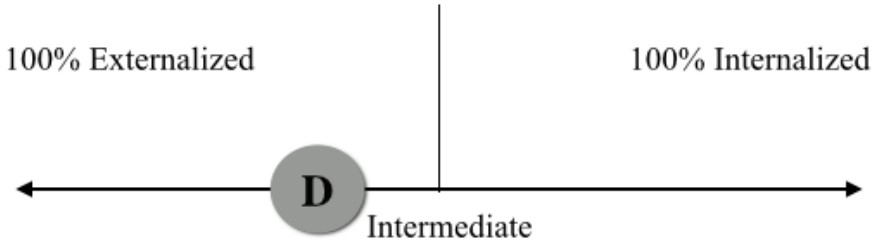

Figure 14. Company D's type of entry mode

Summary of Entry Mode Decisions

In this section, the entry modes of all case companies have been mapped out. Company A has an internal strategy, Company B an external strategy, and Company C and D both use an external-intermediate mode, see Figure 15.

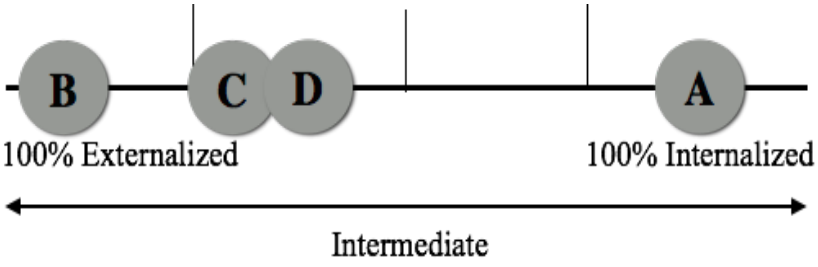

Figure 15. The entry modes of the case companies

6.3.2 Comparisons of Change Agent Acquisition

The case companies' change agent acquisition has now been analysed with the use of market entry strategy, and their relative position can be seen in Figure 15. Their position is based on the author's analysis of the current mode, and it gives a snapshot of today's situation. The following section discusses how this entry mode decision affects the adoption of solar cookers, and aims to investigate if the type of entry mode allows them to acquire the appropriate change agents. This will be a cross-case analysis, categorising the case companies strategies in three categories. The authors give a visual presentation as an indication of how their strategy affects their ability to acquire the appropriate change agents. This mapping is an interpretation of statements from the case companies and seeks to outline the main differences between the strategies at a broad level.

Company A: Internal Type of Entry Mode

As was seen in findings and analysis, Company A is conducting all change agent activities internally with their two employees. However, the two employees in Company A admitted that they do not manage to cover all the recommended adoption activities. They are currently only sporadically providing training and demonstration in communities, and due to the lack of human resources, they cannot provide continuous follow up and maintenance. They also admit that this is a challenge themselves. Concerning characteristics, Company A goes into new and foreign communities where they are not known, which may result in low trust. Additionally, the fact that they are two white men makes it obvious that they do not have the same sex as the majority of their customers.

Company A fails in several important characteristics and activities in order to overcome the barriers. Table 15 below shows an analysis of the statements from Company A, showing their level of control on the identified appropriate characteristics and activities, by using their own two internal employees. Red illustrates limited fulfilment, orange shows that the company has some control, whereas green symbolizes sufficient control of appropriate characteristics.

Table 15. Company B's assumed fulfilment of characteristics of change agents

Characteristics	Local knowledge	Trusted person	Female	Technical knowledge	High status
Company A	To some extent	Limited	Limited	Sufficient	To some extent

Company A has chosen their strategy in order to have a high control in their markets, where they want control over the adoption process, and they want to ensure that the users get the proper teaching and training that they need. Erdener (2014) and Terpstra et al. (2012) support this strategy, claiming that companies should protect themselves in developing countries by having control. However, this entry

mode requires a lot of resource commitments and it takes time to change, resulting in low flexibility and lower growth (Hollensen, 2012). This may be connected with the low growth rate that Company A has experienced during their seven years of existence. When they need to be physically present in all markets themselves, their work capacity and growth potential have become very limited (Doole and Lowe, 2012).

The authors see several challenges with Company A's choice of acquiring change agents, with a completely internal strategy. The authors indicate a concern towards two aspects. Firstly, Company A cannot fulfil all the suggested characteristics. They are certainly not fulfilling being a trusted and female change agent, and it is rather uncertain that they have the required local knowledge and high status in the areas they are entering. Secondly, having such an internal focus requires a lot of resource commitments, which is not perfectly aligned with running a start-up company that is lacking a resource base. The authors see indications that their choice of an internal mode is probably not the best way to ensure proper adoption of solar cookers as a start-up company.

Company B: External Type of Entry Mode

It was shown in the results and analysis that Company B is using an external entry mode, and they are doing nearly no follow-up of their change agency. Company B has a very limited control over what activities their external change agency is doing. The change agency is working almost independently, and this can be shown in the table below.

This thesis has emphasized that solar cookers are seen as complex products, supported by both literature and empirical findings. This suggested that change agents should have technical knowledge, provided through change agencies. However, Company B stated that they share little of their technological expertise with the change agency, which suggests that Company B has little control over the change agent's level of technological knowledge and expertise.

Company B has also low knowledge about the change agents' characteristics, showed in Table 16 below. However, it may be that the NGO is doing a good job as filling the change agent's role, but this is something Company B has *no control* over. The authors find this lack of control to be a great challenge for Company B, and literature suggests that this strategy is particularly risky in developing markets (Kogut and Singh 1988, Kaynak and Herbig, 2014).

Table 16. Company B's assumed fulfilment of characteristics of change agents..

Characteristics	Local knowledge	Trusted person	Female	Technical knowledge	High status
Company A	Limited	Limited	Limited	Limited	Limited

It appears that Company B is reaching high sales, but they are lacking control over the change agents' fulfilment of characteristics and the adoption of their products. Company B's low attention towards the actual adoption may lead to both dissatisfied customers and financial loss in the long term (Sarin et al., 2003).

Furthermore, contextual literature suggest that this way of operating may negatively affect the industry as a whole because the lack of follow-up of customers can lead to higher barriers to adoption (Kebede et al., 2014). It may be that Company B *wishes* to make a positive change, but their distant relationship with their external change agency gives them very limited control over the change agents' appropriateness, which has been shown to be of high importance of the adoption of solar cookers.

The authors suggest that Company B's strategy is not beneficial for adoption of solar cookers. The lack of training and follow-up of their change agency can lead to higher barriers to adoption. Company B's strategy does not help the company to overcome the barriers to adoption in the industry today.

Company C and Company D: Between External and Intermediate

Company C and D are put very close to each other as seen in Figure 15 and they have chosen a type of market entry mode between intermediate mode and externalized mode. Both companies are following up with their partners closely, ensuring that the external change agency is conducting the necessary activities to overcome the barriers to adoption. Company D is seen to have an even closer follow-up of their change agencies than Company C, and is therefore placed slightly more towards internalization.

Company C is contracting the activities that change agents should do. Their CEO stated, "We specify that our partner has to conduct training and demonstration in our contracts". The follow-up of the change agency also has the advantage that they can share their experience from other countries with the change agency, and hence take advantage of cross-market learning. Another potential advantage is that they may possibly reach scale faster because they can enter several markets simultaneously.
They try to find distributors that share the same values as themselves, where they should be commercial, but also driven by responsibility. They prefer commercial distributors because they claim that NGOs are seldom used to doing continuous follow-up. Commercial distributors on the other hand know that they must do follow-up in order to have happy customers and get more sales. Company C is very conscious

about how their change agents are operating, and they have knowledge about the adoption activities happening in the field. Company C makes specific agreements with the distributors where they agree on having demonstrations and provide the necessary training, where they for instance arrange cooking classes. Potential customers can then participate before purchasing a solar cooker.

Table 17 presents the likely control that Company C and D are having on the characteristics of change agents, based on their statements. Both companies follow up the change agency to such extent that they have control over their characteristics, and they confirmed that it is important for them to share technical knowledge with the change agents. Company D also stated that they are giving instructions to their change agency about the required activities. Additionally, both companies claimed that local people choose change agents, which signifies that this person is trusted.

Table 17. Company C and D's assumed fulfilment of characteristics of change agents..

Characteristics	Local knowledge	Trusted person	Female	Technical knowledge	High status
Company C	Sufficient	Sufficient	To some extent	Sufficient	To some extent
Company D	Sufficient	Sufficient	To some extent	Sufficient	To some extent

Company C and D are using an external entry mode, where their close follow-up of change the agency seems to ensure them a *high control* over the appropriateness of change agents. They manage to acquire resources externally, which has been heavily proposed by literature for MNCs in similar contexts (such as Kolk et al., 2014 and Ansari et al., 2012), and also maintaining a degree of control, suggested by market entry literature such as Erdener, 2014.

Based on the case findings, the authors suggest that Company D and Company C are the case companies that to the largest extent succeed in acquiring appropriate change agents.

Table 18. Summary of how well the case companies are seen to fulfil the required change agent characteristics

Case company	Fulfilled characteristics?
Company A: Internal type of entry mode	To some extent
Company B: External type of entry mode	Limited
Company C and D: Between external and intermediate	Sufficient

In this section, the case findings were analysed and discussed. Three out of four case companies are leaning towards externalization, and this correlates with former business strategy literature stating that companies should get access to other actors' resources in order to meet the challenges in the demanding marketplace of developing countries (Blowfield and Murray, 2011, Ireland et al., 2002, London and Hart, 2004).

Organizational Purpose- Is There a Relationship with Entry Mode?

The authors discovered a possible link between the case companies' choice of market entry strategy and the paradox of responsibility vs. profitability. Responsibility is related to if the company´s organizational purpose is leaning towards increasing the common wealth of all stakeholders, while a profitability focus is related to how the company can create internal profit and serve its shareholders (Berle and Means, 1932, Freeman and Reed, 1983; De Wit and Meyer 2010).

Company A's focus on responsibility can be supported by the CEO from Company A's statement: "Our goal is that we have the necessary income to cover the required salaries". Company A show a high degree of moral obligations towards their customers, and this has made it difficult for the company to grow and make profits (De wit and Meyer 2010). This organizational purpose may impede the possibility of finding investments (Friedman, 1970). Nevertheless, Company A states that their focus on responsibility and internal strategy with high control has resulted in great adoption rates and satisfied customers. This may be seen as a beneficial long-term strategy, but the authors find the strategy to show too slow results.

The external focus of Company B may also be seen in relation to the paradox profitability and responsibility. Company B stated, "*Our strategy was chosen to generate sales and speed up the growth rate"*. This gives the impression that they are more focused towards profitability than responsibility. Here, it seems like the direction of the company is decided by the business opportunities that arise. Company B is the case company with both the highest sales number and the largest number of employees. It seems like Company B serve their owners, and their investors are in a position to get financial return on their investment, which are characteristics of companies having an organizational

purpose focused towards profitability (De Wit and Meyer 2010, Friedman, 1970). The authors see however that there are indications that their profitability focus compromises the actual adoption of the products.

The authors see Company C and D to lie in between responsibility and profitability, where they both have a great caring for the actual adoption rates. Both CEOs stated that their main driver is to make a difference in this world, and that profits is rather a mean for doing so. The authors again see a potential link between a company's export mode and their organizational purpose. However, this is not the main focus of this thesis, and the authors rather suggest this for further research.

Summary of Change Agent Acquisition

In the last chapter it was shown that the company C and D's resource acquisition strategy of change agents seem to be fulfilling most of the characteristics of appropriate change agents. This suggests that a strategy between external and intermediate mode may be an appropriate acquisition strategy of change agents in the solar cooking industry. Leaving a change agency alone without providing follow-up gives the start-up low control over the adoption process and little knowledge about what activities the change agent is conducting or what characteristics they have. Too high internal focus with a high degree of internal resource commitments might lead to low flexibility, and lead to slow growth (Sharma and Erramilli, 2004).

The authors also analyzed the present market factors using Hollensen's (2012) framework, and found that this also suggests an external-intermediate mode, see figure 16.

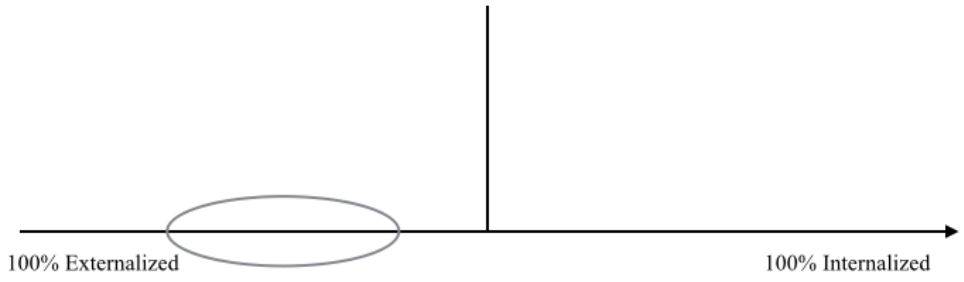

Figure 16. Area of externalization appropriate for solar cooking start-ups

Linking theory on barriers to adoption and market entry together with context relevant literature and empirical data, the authors thus suggest that a start-up entering a developing market with a solar cooker should be placed in the area between intermediary mode and externalized mode, see Figure 17 below.

This mode should include follow-up and continuous contact between the start-up and the change agency, to ensure that the appropriate change agents are used.

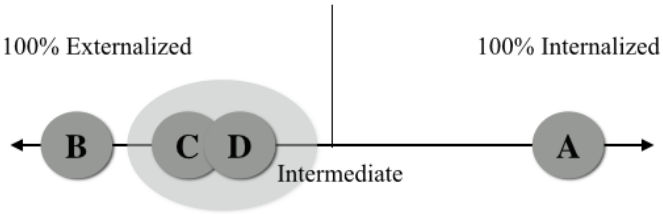

Figure 17. Suggestion of type of entry mode that the authors suggest will let the company acquire appropriate change agents.

7 Conclusion

Q: How can start-ups acquire appropriate change agents to overcome barriers to adoption when entering a developing market with a solar cooker?

The authors found six barriers to adoption based on the case study. Out of these, two barriers were put in focus due to three reasons. Firstly, they were mentioned by former contextual literature; secondly these two barriers were consistent with diffusion of technology theory; and thirdly they could be overcome with the use of change agents. These two barriers were *disruptive cooking method* and *high complexity*.

In order to overcome these barriers, this thesis suggests specific activities that change agents should conduct, and the characteristics they should have. An appropriate change agent in this context was suggested to be able to do demonstrations, provide training, and follow up customers. In order to do so, it should be a female with both local and technical knowledge, and it should be a trusted person with high status. The authors therefore suggest that change agents' characteristics should possibly lean more towards heterophily than what was originally suggested by Rogers´ (2010) framework, when it comes to the solar cooking industry in developing markets.

In order to acquire these appropriate change agents to overcome the barriers to adoption, this thesis suggests that start-ups should find change agents through an external change agency. However, start-ups should develop a close relationship with the agency to ensure that the change agents operating in the field fulfil the appropriate characteristics and conduct the suggested activities. Start-ups that aim to do all implementation activities internally might have difficulties in fulfilling characteristics such as having local knowledge, being a trusted female, or having high status. A type of market entry mode between external and intermediary is therefore suggested as a preferred change agent acquisition strategy for start-ups entering a developing market with a solar cooker.

7.1 Implications

Theoretical Contribution:

This thesis is suggesting that Rogers' general definition of an ideal change agent may not be applicable to all contexts. The authors propose that the scope of change agent characteristics should be broadened to some extent when applied to developing country markets. This thesis suggests that change agents within solar cooking in developing markets preferably should have high status, which is contradicting to Rogers' general theory. It also suggests that they should be female, which has not been specifically emphasized by former diffusion of innovation literature. This research should be conducted in similar contexts to see if this is a recurring pattern across other industries in developing markets.

Secondly, this thesis contributes to the field of market entry strategy by widening our understanding of the appropriate entry modes for start-ups entering developing markets. It is here suggested that external modes might be preferred due to the high market risk and start-ups' lack of internal resources. This thus suggests that some of the literature on MNCs entering developing markets may be applicable to start-ups, such as Seelos and Mair (2007) and Kolk et al. (2014).

Practical Contribution
This thesis has given specific recommendations for practitioners working within the solar cooking industry. Specific characteristics of change agents have been suggested, and the authors have given specific suggestions to how start-ups can acquire these. The thesis has hence given a recommendation and a tool kit, to help start-ups choose the most appropriate entry strategy.

7.2 Limitations

This thesis has not taken into account the differences between different developing countries, which may be seen as a limitation. The authors recognize that there are large differences, and even large differences within one country. However, as no former literature exists within this specific field, there was a need to firstly do a broad analysis relevant for the majority of developing countries. Additionally, the authors claim that the factors identified in this thesis are mostly connected with the nature of the technology, and can thus be applicable to a wide range of developing markets where biomass is the current cooking method. The change agent characteristics, and the recommended market entry modes seem to be applicable to a wide range of countries. The authors recommend future research to look into country specific factors.

As stated previously in this thesis, the majority of former literature on solar cooking barriers was based on NGO projects. The authors agree that it would be preferred to base the research on literature specific to commercial projects, but that literature does not yet exist. However, as the main barriers of focus in this thesis were disruptive *cooking method* and *high complexity*, these can be stated to be similar across both commercial and non-commercial projects.

7.3 Recommendations for Further Research

The authors see several areas of research that would be interesting to investigate:

The authors recommend investigating the actual adoption rates for internal versus external market entry modes. This could for instance be done by verifying adoption curves by doing an in depth quantitative study. A quantitative study could thus validate the findings in this thesis and show more specifically the differences of adoption rates between change agent acquisition strategies.

It would also add great value to look into the differences between the types of change agencies. In other words, the differences between commercial, versus non-profitable change agencies. This could be either a qualitative study investigating the implications on business strategy or profitability, or by conducting a quantitative study about the differences in adoption rates between the different change agencies.

It would be interesting to further investigate the new suggestions to barriers to adoption that emerged from the interviewees, namely *High Investment Risk* and *Unavailability*. In addition, the barriers that cannot be met with the use of change agents, namely *low purchasing power* and *lack of industry standards*, would also be interesting to investigate further.

The authors see a potential relationship between a company's entry mode and their organizational purpose. The level of externalisation and their level of focus on profitability seemed to correlate. However, there is far from enough data to make any conclusions within this field, and the authors recommend further research to look into this potential relationship.

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Appendix A: Interview Guide

1. There are some barriers to adoption when it comes to solar cookers in developing countries. Based on your experience, what are the largest challenges with solar cookers in developing markets?
2. What do you see as the key value propositions/ the reason why people buy solar cookers?
3. Do users know about solar cookers from before?
    a. If yes, what do they know?
    b. What do customers think about quality of previous products?
    c. Do potential users see solar cooking as a technology for the rich or for the poor?
        i. Poor mans product
4. How is the reputation of solar cookers at Industry level and user level?
5. How is the educational level of your potential users in developing markets?

. Do you see any correlation between general education level and adoption?

6. Do users save money (or not) when buying your solar cooker? Any estimates?
7. In what way do your potential users think that they will save money?
8. Do your potential users have the required funds for the purchase?

. What is it like for the majority?

9. How does the solar cooker allow users to continue their traditional cooking?

. In what way do your customers see that the solar cooker fit with their daily life?

10. Do people understand how to use a solar cooker?
11. We have identified the following barriers to adoption. What are your comments on these barriers?
    i. Seen as a technology for the poor
    ii. Bad experiences with previous solar cookers
    iii. Low level of education
    iv. Low financial advantage
    v. Incompatibility with local food and cooking traditions
    vi. Lack of intuitiveness and high complexity

Part 2- Only for case companies

1. What resources and capabilities do the companies need to overcome barriers to adoption?
2. What do you believe is the best way to overcome the mentioned barriers to adoption?
3. You talked about change agents, what should they do and what characteristics should they have?
4. How can the companies acquire these resources?
5. How did you acquire these resources? (How did your company get access to change agents)
6. What kind of partners do you have?
7. Name of partners and key characteristics
8. How much contact do you have with them?
9. Do you know what they do and have they implemented your solar cookers?
10. Do you have control over the activities and do you follow up, how?
11. What do you think is the best model to acquire change agents?

Appendix B: Overview of Newspaper Articles

NEW DELIVERY MODELS AND PARTNERSHIPS WILL UNDERPIN HUMANITARIAN RESPONSE TC

Press Association National Newswire, Friday, 02 November 2012, 11:41 AM GMT, 436 Words, (English), (c)2012, The Press Association, All Rights R
(Document PRESSA0020121102e8b2002uw)

BRUSSELS, November 2, 2012 /PRNewswire/ -- The scale and pace at which emergencies are evolving pose a huge challenge to the hu

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Neue Liefermodelle und Partnerschaften unterstreichen die humanitäre Reaktion auf steigende Herausf

news aktuell OTS - Originaltextservice, Friday, 02 November 2012, 496 Words, (German), (c) 2012 news aktuell
(Document OTS0000020121102e8b200692)

Brüssel (ots/PRNewswire) - Tempo und Massstab, in denen sich Notstände ausweiten, sind eine enorme Herausforderung für die humani

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SOME LIGHT RELIEF

The Sunday Times, RENÉ VOLLGRAAFF, Sunday, 11 March 2012, 998 Words, (English), Copyright 2012 Avusa Media Ltd. All Rights Reserved.
(Document SUNTIM0020120312e83b00015)

Energy regulator lowers next month's Eskom power price increase from 25.9% to 16%, writes RENÉ VOLLGRAAFF Despite the lower tari

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FIFA 2010 Green Goal: Major Initiative to Green the FIFA World Cup Kicks Off

Targeted News Service, Tuesday, 08 June 2010, 1072 Words, (English), Copyright 2010 Targeted News Service ALL Rights Reserved
(Document TARGNS0020100609e668001f3)

JOHANNESBURG, South Africa, June 8 -- The United Nations Environmental Programme issued the following news release: Three days

Melt buildings to save fuel. [1 table in original article]

New Scientist - UK Edition, Saturday, 07 January 2012, 228 Words, (English), (c) 2012 Elsevier Engineering Information www.ei.org
(Document NWSCAL0020120116e81700001)

The development is described of phase change materials (PCMs) for use in construction and other applications. In a typical application, use of a PCM gel encapsulated inside the wall

Utah inventor wins entry to entrepreneur boot camp with solar stove

The Salt Lake Tribune, Judy Fahys, Friday, 11 February 2011, 360 Words, (English), © 2011 The Salt Lake Tribune. Provided by ProQuest Information and Learning. All Rights Reserved.
(Document SLTR000020110214e72b00060)

Small donations from dozens of supporters have helped a team led by Holladay native and inventor Scot Frank to land a spot in a kind of entrepreneurial boot camp hosted by a group

Young Utah engineer tackles world's toughest problems

The Salt Lake Tribune, Judy Fahys, Sunday, 30 January 2011, 1123 Words, (English), © 2011 The Salt Lake Tribune. Provided by ProQuest Information and Learning. All Rights Reserved.
(Document SLTR000020110131e71u0007d)

Scot Frank could not imagine the perspective he would someday have, back when he was growing up in Holladay and striding the steep trails to Wasatch peaks.

DE ALLERBESTE GROENE IDEEËN; Winnaar Green Challenge helpt nu al West-China

De Telegraaf, Saturday, 25 September 2010, 484 Words, (Dutch), Copyright 2010 Uitgeversmaatschappij De Telegraaf B.V. All Rights Reserved
(Document BVDTEL0020100925e69p0006c)

AMSTERDAM - "Met de prijs van €500.000 kan ik de eerste kookpotten maken voor het gebied in West-China dat dit voorjaar overstroomde", zegt Scot Frank (25), winnaar van

EU-Netherlands-Environmental-Prize

The Canadian Press - Broadcast wire, Thursday, 23 September 2010, 3:03 PM GMT, 141 Words, (English), (c) 2010 The Canadian Press. All rights reserved.
(Document BNW0000020100924e69n00037)

AMSTERDAM, Netherlands - A U.S. company has won a C500,000 ($667,000) environmental prize for developing an extremely cheap solar-powered cooker and electricity generator.

Globe West Community briefing

The Boston Globe, Sunday, 22 November 2009, 2430 Words, (English), © 2009 New York Times Company. Provided by ProQuest Information and Learning. All Rights Reserved.
(Document BSTNGB0020091123e5bm000by)

Arlington TOWN MEETING OK'S NEW TAXES - Town Meeting members passed a local-option tax on restaurant meals and an increase in the local hotel tax during Monday's session

Appendix C: Coding Categories

Appendix C displays the coding categories that were used in the analysis of the cases.

Predefined categories	**Evolving categories (change agent acquisition)**
Low purchasing power	Internal
Disruptive cooking method	External
Technology for the poor	Follow-up
No industry standard	
Complexity	
Low formal education	
Other barrier	
Microfinance	
Training	
Demonstration	
Industry alliance	
Change agents	
Characteristics of change agents	
Other resources	