Sustainable Food by Design

Co-design and Sustainable Consumption Among the Urban Middle Class of Vietnam

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**Co-design and Sustainable Consumption among
the Urban Middle Class of Vietnam**

JOTTE DE KONING

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Urban Middle Class of Vietnam

Proefschrift

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SUSTAINABLE FOOD BY DESIGN

Co-design and Sustainable Consumption Among the
Urban Middle Class of Vietnam

Jotte de Koning

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Voor mijn ouders,
To my parents

EXECUTIVE SUMMARY

The population of Vietnam is growing, the economy thriving and the middle class expanding at rapid speed. Changes, that in the West expanded over several decades and several generations, are developing in Vietnam as well as in other emerging countries within a few years. This transition in Vietnam is the subject of study in this thesis, specifically at the consumption level. An increase in consumption is seen across different categories and phases: sales of washing machines, refrigerators and motorbikes are increasing; consumption of meat products, water and energy is rising; and landfills of disposables and other types of waste are growing. From an economic prosperity point of view, one can applaud the increased availability of products and services and encourage the transition. However, from an environmental point of view, one can look at this with concern. On top of that, the large population in emerging economies make that the growing middle class and their rising consumption levels have a far reaching effect and a high degree of urgency.

Government and knowledge institutes are important in guiding the consumption transition towards a more sustainable future. However, in this thesis, the focus is foremost on the consumers and second on the industry of consumer products and services. A possible alliance between consumers and industry was explored through studies of co-design. Therefore this thesis was built on the following research question:

> *The Vietnamese middle class consumers, and their consumption patterns, are transitioning. How can co-design support the Vietnamese production and consumption system and keep the prosperity thriving as well as provide more environmental sustainability?*

A design based-research approach was applied because the research question treats a complex and real-life phenomenon. But, even more so because the goal was to analyse the less favourable transition of more environmental impact of consumption in Vietnam as well as to intervene in this complex situation. Specifically the research followed a Human Centred Design approach. This has put the focus foremost on the human, or consumer in this case. The first study, in a series of five, focused on the understudied middle class consumers in Vietnam and their current (sustainable) consumption patterns; the second on how to increase

sustainable consumption; the focus switched to the industry in the third study; to arrive at the intervention of co-design in the last two studies.

Study 1

The results of the first studies showed that the urban middle class consumers in the study were rather unfamiliar with the general topic of sustainable consumption. However, a concern for health and future generations as well saving money or saving resources were identified as possible good motivators for sustainable consumption. Often, from times of adversity before, saving habits were also still rooted in behaviour patterns. Five consumption categories were focused on: transport, energy, food, water and waste. Regarding sustainability, people showed to be most interested in food and energy. The highest motivation was shown for food but people did not always engage in sustainable food consumption (yet), they said, because they did not know where to find (trustworthy) products.

Study 2

Second, a group based sustainable consumption program (Get Green Vietnam) was analysed for 600 urban middle class consumers. The program activated groups to engage in sustainable consumption during six meetings that took place over the course of several weeks; the results showed that change was possible. By the end of the program people said they were involved in more sustainable actions than before, from 64% of the actions before to 80% after. The feeling of doing things together and the practical guidance, lead to success. The social aspect showed to create a sense of community and a great component in motivating people for sustainable consumption. It strengthened the motivation and action, sometimes despite the ridicule of friends and family. The main remaining barrier, people said, was that they did not know where to find products that would fit the sustainable lifestyle or being able to afford these products. However, again people said that specifically for food products they were willing to pay a premium, if they would be able to find trustworthy sources.

Study 3

Because of the consumers' motivation and intentions for sustainable food, the third study focused on the agro-food industry. Specifically small and medium (SME) enterprises were studied because they are known to be able to innovate quickly, in short cycles and to have

close ties to their users. The product and service innovation processes of fourteen Vietnamese SMEs were studied as well as their ability to engage and involve users in these processes. A model of 'mental innovation space' was developed to capture these capabilities.

The studied SMEs displayed a low mental innovation space. Structured innovation processes were not common. They had little experience with innovation and practiced short-term planning of incremental improvements close to the market. They showed low (participatory) design skills and often their products were copied from other (international) companies. Also, because of a fear of being copied, innovation processes were often closed. The SMEs struggled and were struggling to bind customers but had partially managed by building personal relationships of trust. They showed openness to collaborate and engage more with their customers and they recognised the need to innovate to be able to compete in the globalising agro-food market of Vietnam.

Studies 4 and 5

Finally, to provide a mutual solution for the problems of both consumer and SME, sixteen co-design workshops were organised in the last study. Literature on different forms of co-creation, to stimulate innovation by feeding of interaction, was studied. Co-design was selected because it provides a structured way of personal, direct and physical interaction with consumers. The premise was that it could strengthen the competitive position of local firms (and thereby strengthen Vietnam's economy). That it could stimulate the development, acceptance and spread of sustainable food products in Vietnam as well as enhance the relationship and mutual understanding between the eager SMEs and willing customers. The topic of sustainable consumption, as a rising concern on both sides, was used as a trigger for dialogue in the workshops.

A co-design method and guide was developed specifically for agro-food SMEs and sustainable food consumption in Vietnam. This guide also includes a framework of consumer sustainable food actions with company guidelines to stimulate these actions.

The results of the co-design workshops showed that value was reached for the companies. They said they were able to better understand their (sustainable) consumer and to provide

better products and services. The workshops also reinforced the course for more sustainable production of food. However, the product and service ideas created in the workshops were not always perceived as highly valuable because of their supposed infeasibility. The companies described the ideas as requiring large investment of time or money. However, the research suggests that a lack of design thinking and formal design skills prohibited the companies to transform the (in the workshop) generated ideas to feasible directions for new product development.

A higher value than expected was brought forward by the focus on sustainable food consumption. The practical knowledge and evidence of the companies provided better understanding for the participating customers. Inexperienced sustainable consumers were educated through the co-design workshops and companies felt able to be a role model for consumers in general. Conversely, here lies also one of the pitfalls of co-design on the topic of sustainable food: companies feel their superiority and start to only send information and not listen to what consumers want. This was occasionally experienced in the co-design workshops. On the other hand, companies that were relatively inexperienced with sustainability, and were connected to more sustainable oriented customers in the workshops, felt motivated to pay more attention to sustainability in the future.

Final recommendation

To conclude, social ties and social support are very important for sustainable consumption in Vietnam. Role models are needed as well as an increased availability of sustainable products to support a transition towards future sustainable lifestyles. Co-design could help this process, rather by creating a sense of community and trust than by stimulating the creation of revolutionary new sustainable products. Co-design activities can aid the fortification of the alliance between local agro-food SMEs and consumers. The practical knowledge and evidence of the companies make them ideal candidates to be role models society needs; this should be activated and stimulated.

SAMENVATTING

De economie en de bevolking van Vietnam groeien en de middenklasse wordt met het jaar groter. Veranderingen, die zich in het Westen verbreidde over meerdere generaties, ontwikkelen zich nu binnen een paar jaar in Vietnam, net als in andere opkomende economieën. Deze transitie is het vertrekpunt voor deze dissertatie, specifiek gericht op de veranderingen in consumptie. Een toename van consumptie in Vietnam is duidelijk te zien in verschillende consumptie categorieën en verschillende consumptie fasen: de verkoop van wasmachines neemt de toe, koelkasten en scooters; het gebruik van vlees, water en energie nemen toe; en afvalbergen worden groter door het toenemend gebruik van wegwerp producten en producten in het algemeen. Economisch gezien levert deze toename in consumptie veel op maar aan de andere kant krijgt het milieu steeds meer te verduren. Daarbovenop komt dat de grote bevolkingsaantallen in de opkomende economieën in Azië deze effecten alleen maar uitvergroten. Dit maakt dat ook daar duurzaamheid een hoge mate van urgentie heeft.

De overheid en kennis instituten zijn belangrijk in het leiden en begeleiden van een consumptie transitie naar duurzamer patronen. Echter, in deze dissertatie ligt de focus op de rol van de consumenten en ten tweede ook die van producenten. Een mogelijke alliantie tussen consumenten en producenten in Vietnam was onderzocht doormiddel van co-design. Dit zorgde voor de volgende onderzoeksvraag:

> *De Vietnamese middenklasse, en hun consumptie patronen, zijn in transitie. Hoe kan co-design de Vietnamese productie en consumptie systemen ondersteunen opdat de toename in welvaart behouden blijft en tegelijkertijd een bijdrage wordt geleverd aan meer duurzaamheid?*

Als onderzoeksmethode is een ontwerp aanpak toegepast omdat de onderzoeksvraag een complex verschijnsel betreft in de echte wereld. En temeer omdat het doel was niet enkel de veranderingen te onderzoeken en hun minder wenselijke impact op het milieu maar ook om in deze situatie in te grijpen. Nog specifieker, een Human Centred Design aanpak is gevolgd wat maakt dat de mens of consument centraal stond. De eerste studies, van een totaal van vijf, richtte zich daarom op het begrijpen van de consumenten van de middenklasse in Vietnam en hun (duurzame) consumptie patronen. De volgende studies spitste zich toe op het mogelijk

vermeerderen van de duurzame consumptie. Vervolgens is de industrie onder de loep genomen en in de laatste studies is een interventie van co-design geïntroduceerd en bestudeerd.

Studie 1

De resultaten van de eerste studies laten zien dan de consumenten van de stedelijke middenklasse in Vietnam relatief onbekend zijn met het onderwerp duurzaamheid. Echter, een toenemende aandacht voor gezondheid en een sterk belang in toekomstige generaties evenals een motivatie voor besparen vormen een goede basis voor toekomstige duurzame consumptie. Vaak is het zo dat vroegere tijden van schaarste gewoonten hebben gevormd die nog steeds onderdeel zijn van dagelijkse rituelen en dus (nog) niet verdwenen zijn. Specifiek zijn er vijf consumptie thema's onderzocht: transport, energie, water, voedsel en afval. Met betrekking tot duurzaamheid waren mensen het meest geïnteresseerd in voedsel en energie. De sterkste motivatie toonden mensen voor voedsel en duurzaamheid maar weinig mensen deden hier iets mee omdat ze het moeilijk vonden 'echte' en betrouwbare duurzame voedingsproducten te vinden.

Studie 2

De tweede studie betreft een analyse van een duurzaam consumptie programma: Get Green Vietnam. Meer dan 600 consumenten van de stedelijke middenklasse werden geprikkeld met praktische handelingen voor duurzame consumptie gedurende zes bijeenkomsten in kleine groepen. De resultaten laten zien dat verandering mogelijk is. Na het programma zeiden deelnemers over het algemeen dat ze meer duurzame handelingen deden dan daarvoor, van 64 procent voor het programma was dit gestegen naar 80 procent van de handelingen na het programma. Het gevoel samen te handelen en de praktische tips leiden tot succes. De sociale component zorgde voor een groepsgevoel en was een grote motivatie voor mensen om duurzamer te handelen, ondanks dat deelnemers soms werden uitgelachen door niet deelnemende vrienden of familie. De meest gehoorde barrière bleef het niet kunnen vinden of veroorloven van producten die pasten bij bepaalde handelingen. Maar, er werd ook gezegd dat voor duurzame voedselproducten mensen bereid waren meer te betalen.

Studie 3

Naar aanleiding van de motivatie van consumenten voor duurzamere voeding, richtte de

volgende studies zich op producenten in de agro-voedsel industrie. Het midden klein bedrijf (MKB) werd specifiek bestudeerd omdat zij bekend staan snel en kort-cyclisch te kunnen innoveren en vaak nauwe banden hebben met hun consumenten. De innovatie processen van producten en diensten van veertien Vietnamese agrobedrijven zijn bestudeerd evenals hun vermogen gebruikers te betrekken bij deze processen. Een Mental Innovation Space model is ontwikkeld om deze capaciteiten te beschrijven.

De bestudeerde MKB bedrijven getuigden niet van een grote Mental Innovation Space. Gestructureerde innovatie processen waren niet gebruikelijk en er was ook weinig ervaring met innovatie processen. Vaak waren vernieuwingen gering en gebeurden deze ad-hoc als snelle directe reactie op de markt. Vanuit een angst om gekopieerd te worden waren vernieuwingsprocessen vaak gesloten. De bedrijven toonden ook weinig participatie of samenwerk vaardigheden. Het was niet ongebruikelijk dat producten gebaseerd op of gekopieerd waren van andere (internationale) bedrijven. Een worsteling met het binden van klanten werd vaak waargenomen maar sommige bedrijven was dit gelukt door middel van het bouwen van vertrouwelijke en persoonlijke relaties met hun klanten. De bedrijven waren over het algemeen enthousiast over de mogelijkheden klanten meer te betrekken bij hun processen, temeer ze een noodzaak voor innovatie zagen om te kunnen wedijveren en te overleven in de toenemend globaliserende Vietnamese markt.

Studies 4 en 5

Tenslotte, om een wederzijdse oplossing te bieden voor de worstelingen van zowel bedrijven als consumenten, zijn er zestien co-design workshops georganiseerd. De co-creatie literatuur was bestudeerd en deze studie wees co-design uit als een mogelijk passende manier. Dit is omdat co-design een structuur biedt voor persoonlijk en direct contact tussen klanten en bedrijven specifiek gericht op producten en diensten. Het uitganspunt was dat co-design workshops, door middel van wederzijds begrip rond het thema duurzaamheid, het klantgerichte ontwikkeling van duurzame voedselproducten zou stimuleren. Dit zou de positie van de Vietnamese bedrijven kunnen versterken en meer duurzame consumptie in Vietnam kunnen bevorderen. Een methode en handleiding is ontwikkeld voor co-design rond het thema duurzame voeding in Vietnam. Deze handleiding bevat ook een framework met uitganspunten voor duurzame

voeding in het algemeen en specifieke acties voor consumenten en producenten.

De resultaten van de zestien co-design workshop laten zien dat waarde was gecreëerd. De bedrijven zeiden dat ze hun (duurzame) klanten nu beter begrepen en dat ze mogelijk beter producten en diensten konden leveren. De workshops waren ook een stimulans voor duurzame productie voor de bedrijven. Echter, de specifieke ideeën en concepten werden niet altijd op waarde geschat vanwege hun vermeende onuitvoerbaarheid. De bedrijven beschouwden het ontwikkelen van de ideeën ook vaak als te kostbaar of te tijdsintensief. Het onderzoek doet echter vermoeden dat dit te wijten valt aan de geringe ontwerp vaardigheden die de bedrijven er niet toe in staat stelt de ideeën om te vormen tot uitvoerbare concepten.

Het thema duurzaamheid creëerde een grotere meerwaarde dan verwacht. De praktische kennis en voorbeelden stelde de bedrijven in staat de consumenten van bruikbare en begrijpbare informatie te voorzien. Onervaren consumenten werden geïnformeerd en de bedrijven voelden zich groeien in hun voorbeeld rol. Hierin schuilt ook een gevaar voor co-design, dat van de alwetende houding van een bedrijf. Dit kan er voor zorgen dat tijdens de workshops de bedrijven niet genoeg luisteren en samenwerken maar enkel proberen informatie over te brengen en te overtuigen. Dit trad af en toe op in de workshops. Voor bedrijven en consumenten die relatief weinig ervaring hadden met duurzaamheid maar zich daar wel meer op wilde gaan richten, wakkerde het thema duurzaamheid in de workshops enthousiasme aan.

Samenvattende conclusies en aanbevelingen

Voor duurzame consumptie in Vietnam zijn sociale ondersteuning en verbanden erg belangrijk. Om een meer duurzame levensstijl te stimuleren zijn rolmodellen nodig evenals een groter en meer divers aanbod van producten en diensten. Co-design workshops tussen bedrijven en hun klanten kunnen hieraan bijdragen doormiddel van het creëren van vertrouwen en een groepsgevoel en in mindere mate doormiddel van de creatie van nieuwe ideeën voor producten. De workshops kunnen de verbintenis tussen bedrijven en hun klanten versterken met behulp van praktische kennis en voorbeelden. Op deze manier kunnen bedrijven en klanten rolmodellen en een stimulans zijn voor elkaar.

PART I

Figure 1. A typical housing
block in urban Hanoi. Balconies
are personalised, there is an
airconditioning device at almost
every apartment, laundry hangs to dry
and close to the street level the
electricity cables complete the view.

Figure 2. Sharing a motorbike in Vietnam.

PRELUDE: ON THE BACK OF A MOTORBIKE

In October 2012 I was on the way to one of the first interviews for this research. My Vietnamese colleague took me on the back of her motorbike as sharing a motorbike is very common. Then, I actually understood what I had read over and over again: Vietnam had changed and was changing rapidly. In newspaper articles, forecasts and reports I had read about the growing middle class and the growing urbanization in Vietnam. But the country had developed with a speed even faster than I could have imagined and it was still changing.

My Vietnamese colleague and I were driving to an interviewee who was living in the far western part of Hanoi. From our office at the Technical University Bach Khoa, just south of the centre, we started driving westward. My Vietnamese colleague, a young woman in her early twenties, drove gently down the roads so we could still hear one another. She started to point out things that could be seen along the road. "Look, there used to be the house of my uncle, the block of houses was demolished to build the shopping mall you see now". A few minutes later: "look, there used to be my music school, they are widening the road so they demolished the houses on that street last year". Again, a few minutes later: "look, these houses were built 15 years ago, there used to be rice fields, I remember playing there as a child." Even further westward she started counting years: "this part was built 10 years ago, this was built 8 years ago, 5 years ago" and so on. We arrived at the house of the interviewee, about an hour later. Still, there were rice fields between the houses, but cranes and construction sites were also everywhere around. Soon these rice fields would also make way for new houses and neighbourhoods.

The Times They Are A-Changin'

Come gather 'round people

Wherever you roam

And admit that the waters

Around you have grown

And accept it that soon

You'll be drenched to the bone

If your time to you is worth savin'

Then you better start swimmin' or you'll sink like a stone

For the times they are a-changin'

- Bob Dylan, 1962

1. Introduction

1.1   THE GROWING MIDDLE CLASS OF VIETNAM

1.1.1   INTRODUCTION

The middle class of Vietnam is expanding, the economy is thriving and the population is growing. Some studies expect the Vietnamese middle class to grow from 12 million in 2012 to 33 million in 2020 (BCG, 2013). Changes, that in the West expanded over several decades and several generations, are developing within a few years in Vietnam and in other emerging countries. My grandparents, born in The Netherlands in the 1920's, did not grow up with a flush toilet, a washing machine, a car a phone and so on. That was normal. Their daughter, my mother, born in the 1950's, remembers that her family was the first in their street to own a car and a television. Then me, I sometimes pride myself, growing up in the 1980s and 1990s, that I still know what life without computers, telephones or Internet was like. That I know how to entertain myself without them, or at least, I used to know. It changed fast and families have adapted over the last (almost) century.

But, if you look at Vietnam, we did not change fast at all. In Vietnam these changes are happening now and within one generation, sometimes even faster. People that never had a washing machine are now buying one. People that cooked on coal 10 years ago are now cooking on electric stoves and using microwaves. People that never owned a computer are now accessing the Internet on their smartphones. People that used to cycle or take a bus to work, now own motorbike and are saving up for a car.

1.1.2   SUSTAINABLE CONSUMPTION

From an economic prosperity point of view, one can applaud the change and encourage the direction Vietnam is going. However, if the changes are considered from an environmental point of view, one can look at them with concern. A rapid increase in energy use in Vietnamese cities is evident, because people can now afford air conditioning, washing machines and refrigerators, just like people in the West. Agricultural production is inflated to be able to feed the growing middle class. This is especially fuelled by an increase of meat consumption. Meat products in Vietnam are becoming affordable for more people, every day. Land and soil

are degenerated with the intensified use of pesticides, fertilizers and monocultures; as well as an increase of CO2 emission. Fuel consumption is rocketing sky-high because almost every urban household traded their bicycles for motorbikes over the last decades. This makes that air pollution in Vietnamese cities is quickly becoming one of the worst in the world. Plastic disposables and plastic bags are now part of everyday life. This results in enormous amounts of landfills and pollution of Vietnamese rivers and coastal waters.

In these examples of negative impact on the environment, products (such as air conditioners, motorbikes, washing machines, food products or plastic packaging) play a central role. Therefore, in limiting the negative impact on the environment, these products can play an equally significant role. This makes the influence of (product) design and the relationship between the user and producer of these products possibly crucial. That brings us to the reason this thesis was written, and specifically at a faculty of Industrial Design Engineering. This thesis studies the consumption of products and services among the transitioning middle class of Vietnam, triggered by environmental sustainability. The relationship between companies that produce consumer products and the growing middle class are given special attention within this context.

1.1.3   WEST VERSUS EAST AND EAST VERSUS WEST

A focus on sustainable consumption in Vietnam, brings a dilemma to the table. Due to the new products and services and more easily accessible products and services people are elevated out of poverty and are able to live more comfortable lives. However, the products and services that come along with these new acquired lifestyles create a heavy burden. The question is whether the direction of change in Vietnam can be altered so that, for the economic and social as well as the environmental perspective, Vietnam can continue to change and will change positively. Within this context and dilemma, the consumer companies and middle class consumers are studied as well as the relationship between them.

In this research it is tried to refrain from any sign of a pedantic or even imperious tone. It is not the goal to impose Western ideals on to Vietnam but to be respectful of the habits and culture. Therefore the consumers and context are studied in depth to be able to formulate

directions for the future. However, one can wonder whether it is at all possible to refrain from pedantry when a design researcher operates in a different culture, especially when change is a subject. The changes the Vietnamese middle class is going through are rather comparable to what people in the West have gone through before over a longer period of time. Despite similarities, it is not the same and the context must be studied to understand possible future change.

To conclude, in the West it is only (relatively) recent that people started paying attention to the negative effects of the increased consumption and different lifestyles. Western governments and citizens speak of introducing different consumption patterns, sustainable lifestyles but also of consuming less and strategies of de-growth. In emerging Asia, such as Vietnam, consumers have only recently acquired (and copied from the West) a lifestyle they longed for. How can (the transition to) these new lifestyles be maintained while taking their impact on the environment in consideration? To make sense out of this dilemma and to be able to develop a solution in the future that is not an imposter, this research has been conducted.

1.1.4   GETGREEN VIETNAM (GGVN)

This Ph.D. was co-funded by the SWITCH-Asia programme of the European Union. The aim of the programme is to promote Sustainable Consumption and Production (SCP) in Asia. It was launched in 2007 and is funded by the EU Development Cooperation Instrument. More than 90 projects in 18 Asian developing countries were funded within the SWITCH-Asia programme. Get Green Vietnam (GGVN) is one of these 90 projects. The project is a joint

effort of the Delft University of Technology (DUT), the Vietnam Cleaner Production Centre (VNCPC) and the Asian Institute of Technology Vietnam (AITVN).

Between 2012 and 2015 GGVN focused on contributing to an increase in sustainable consumption among the Vietnamese urban middle class. A number of concerted actions were executed, targeting consumer groups in living and working contexts. The project also aimed

Figure 3. Logo of the GGVN project.

to increase the capacity of consumer organisations and government in encouraging and supporting sustainable consumption. The main effort was to ensure a long-term behaviour change through the training of a total of 1161 change agents. Chapter 2 in Part II reports specifically on the GGVN project's developed training programme and its results.

1.1.5   THESIS STRUCTURE

This thesis is structured in two parts: Part I and Part II (Fig. 4). Part I contains the overall introduction, background and conclusions of the studies described in Part II. Five different studies have been executed. A separate co-design guide, targeted at companies, has been published. This guide includes practical guidelines of how to execute a co-design workshop, similar to the ones in this thesis. The guide is published online by the Asian Institute of Technology under the name: Co-design and Sustainable Food - in Vietnam (De Koning, 2017).

Part I: Introduction, background, main findings and conclusions

1.   **Introduction:** This chapter, the one you are reading now, is the introduction to this thesis. It also includes the explanation of the research question and the methodology after this introduction.

2.   **Background:** The background chapter includes the literature that was studied. It ends with the developed toolkit for co-design workshops.

3.   **Main Findings:** This chapter contains a short summary of the main findings of each chapter of Part II.

4.   **Conclusions:** The final chapter of Part I concludes with a short and long answer to the research question. It also includes implications for theory and practice; recommendations; and, a final reflection on the research.

Part II: The five studies

1.   **Sustainable consumption in Vietnam: an explorative study among the urban middle class:** The first chapter of Part II is an explorative study on the Vietnamese urban middle class consumer and sustainable consumption in general and on five consumption

categories specifically: food, waste, water, energy and transport. This chapter was previously published in the International Journal of Consumer Studies (De Koning *et al.*, 2015).

2.   ***GetGreen Vietnam: towards more sustainable behaviour among the urban middle class:*** The second chapter is a quantitative study on the consumer's reported sustainable action before and after the GGVN programme. This chapter was previously published in the Journal of Cleaner Production (De Koning *et al.*, 2016a).

3.   ***Mental Innovation Space of Vietnamese agro-food firms:*** The third chapter is a study on Vietnamese agro-food SMEs. Through a series of problem definition processes the chapter explores whether the companies have the 'mental space' to innovate and involve their customers in an innovation process. This chapter was previously published in the British Food Journal (De Koning *et al.*, 2016b).

4.   ***Models of Co-creation:*** Chapter four aggregates 50 different models available in literature for a specific form of company-customer interaction: co-creation. It concludes with four meta-models of co-creation. This chapter was previously published in the proceedings of the Service Design Conference Copenhagen (De Koning *et al.*, 2016c).

5.   ***The value of co-design, beyond new product ideas:*** The last chapter of Part II reports on a study of 16 co-design workshops. In these workshops Vietnamese agro-food SMEs and urban middle class customers were brought together. The aim was to trigger human centred product and service innovation around the topic of sustainable food consumption.

Separate guide: A practical co-design manual for companies

Co-design and sustainable food in Vietnam

1   Co-design methodology explained
2   A step-by-step co-design manual
3   Showcases of 16 co-design workshops in the agro-food sector of Vietnam

COMPANIES

PART I

| Introduction, Research questions and Methodlogy **1** | Background **2** |

| Main Findings **3** | Conclusions **4** |

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PART II | GetGreen Vietnam: towards more sustainable behaviur among the urban middle class **2**

PART II | Benefits of Co-design beyond Ideas and Innovation **5**

GUIDE | CO-DESIGN AND SUSTAINABLE FOOD - IN VIETNAM

Figure 4. The thesis structure. An overview of how the different parts are connected.

1.2 RESEARCH QUESTION

1.2.1 INTRODUCTION TO THE GENERAL RESEARCH QUESTION

This research is about the urban middle class of Vietnam and their current transition, fuelled by prosperity. A consumption perspective is used to study the transition and co-design is studied as a tool to positively influence the transition. The positive influence ultimately aimed at is to contribute to a prolonged increase in prosperity while simultaneously contributing to environmental sustainability. This makes the general research question as follows:

> *The Vietnamese middle class consumers, and their consumption patterns, are transitioning. How can co-design support the Vietnamese production and consumption system and keep the prosperity thriving as well as provide more environmental sustainability?*

In order to answer this rather broad and general research question, four detailed research questions have been formulated. As the research advanced the last research question was formed. Therefore, by showing the last research question in full, partial answers to the earlier ones are revealed. A chronological order is respected in the following presentation of the research question in detail. In the conclusions an imagined future will be tentatively sketched by extrapolating the results from the answers to the individual research questions. This future will be about sustainable consumption in Vietnam; of certain interventions that could alter the situation; and recommendations based on the knowledge acquired in the studies.

One term needs clarification first: prosperity. In traditional terms it is often defined as economic success, or as "the condition of being successful or thriving; especially: economic well-being" (Meriam Webster online dictionary, 2016). However, nowadays the traditional measure of prosperity as economic well-being, especially when it is solely based on GDP, is widely disputed. After a certain level of income much of what people value is a matter of judgment. Therefore, alternative measures to describe the progress of nations have been established. An important report on this matter comes from the Commission on the Measurement of Economic Performance and Social Progress, in this report the term subjective well-being is used and defined as follows:

"Subjective well-being encompasses three different aspects: cognitive evaluations of one's life, positive emotions (joy, pride), and negative ones (pain, worry, anger). While these different aspects of subjective well-being have different determinants, in all cases these determinants go well beyond people's income and material conditions" (Stiglitz et al., 2009, p. 216).

Nowadays, a well-known of alternative measures is the in 2012 established World Happiness Index of the United Nations Sustainable Development Solutions Network (Helliwell *et al.*, 2012). In the index of 2016 Vietnam was ranked 96 of 156 countries (Helliwell *et al.*, 2016, p. 21). This ranking was not only based on GDP but also on measures of social support, health life expectancy, freedom to make life choices, generosity and perceptions of corruption. Following the above definition as well as the World Happiness Index, 'keep prosperity thriving' as used in the research question, can be understood as not comprising any of these factors or aspects.

1.2.2   DEFINING THE SCOPE

In general, the main stakeholders identified in addressing environmental sustainability are governments, industry, consumers and non-governmental organisations (Mont & Plepys, 2008). In this research the focus was foremost on the consumer, and later the producer. All stakeholders have limitations of what they can do, as do consumers. They act within social, technological and contextual or market boundaries, as well as the boundaries of their own knowledge (Mont & Plepys, 2008). A possible alliance was sought with one of the other stakeholders. The first studies revealed the possibility of a mutual beneficial alliance with industry. The early findings also indicated that the Vietnamese government was not a favourable partner for the middle class consumer due to the hierarchical structures and their focus on other issues such as economical reform and reducing poverty. Also, specifically for stimulating sustainability in agro-food sector it is often seen that in developing countries the government does not play a large role (UNCTAD & UNEP, 2008). However, in the future the government must play a role in stimulating sustainable consumption with their specific instruments, such as regulation. There is another aspect, that also made the alliance with knowledge-institutes less favourable, and that is the power of practical experience and opportunity to include consumers in this practical experience. Unlike industry, knowledge institutes and government do not have

this specific opportunity. However, the knowledge-institutes could play an important role in the future because of their authority without the commercial interest that businesses have.

1.2.3   RQ1, RQ2: SUSTAINABLE CONSUMPTION IN VIETNAM

The first part of the general research question is about the transition of the Vietnamese middle class and their consumption. To fully understand this transition, the current (sustainable) consumption patterns must be studied as well as how this level could be increased. However, little is know about sustainable consumption in Vietnam. Therefore this research first studied sustainable consumption, specifically focused on the consumption of products and services. This aligned with the ambition of the GGVN project: to contribute to an increase in sustainable consumption.

A focus on the consumer in Vietnam is not because the production side is less important, or because Vietnamese are the only ones that could contribute to environmental sustainability. It is that everyone in the world could potentially contribute to environmental sustainability. The urban Vietnamese middle class, like the Dutch, German, American, Mexican and all others, can each play their role, locally and globally. However, the Vietnamese urban middle class is rather understudied (King *et al.*, 2008) while the population of 95 million is significant in size. The large population and growing middle class in emerging economies make that the rising consumption levels have a far reaching effect (Lange & Meier, 2009; Reusswig & Isensee, 2009) and a high degree of urgency (Vergragt *et al.*, 2014). Also, the middle classes of emerging economies are especially interesting to study because they are in a process of change. Some even argue that the emerging middle classes could leapfrog to sustainable consumption patterns before they become locked-in (Chiu *et al.*, 2009; Sanne, 2002; Jackson, 2008; Tukker *et al.*, 2008). The first research question can be formulated:

> *RQ1: How is the urban middle class of Vietnam currently contributing to environmental sustainability in their buying, using and disposal of different product categories?*
>
> *This research question formed the basis of the studies in Chapter 1, Part II.*

The second part of this research is advancing the first question with a question of how the current situation (the current consumption patterns of the Vietnamese urban middle class)

can be improved. The second research question can be formulated:

RQ2: How can the middle class of Vietnam be stimulated towards buying, using and disposing products and services more sustainably?

This research question formed the basis of the studies in Chapter 2, Part II.

1.2.4   RQ3 AND RQ4: AGRO-FOOD SMES AND CO-DESIGN

The focus of the third and fourth research question is on local small and medium (but especially small) enterprises in the agro-food sector. The agro-food sector was selected because food was found to be a highly attractive topic for the discussion of sustainability in Vietnam (results from the first studies). Small and medium (but especially small) enterprises were selected because they are known to be able to innovate quickly, in short cycles and to have close ties to their users (Dean et al., 1998; Keskin, 2015). Local companies were selected because of their short distance to the users as well as their importance for sustainability in the agriculture industry (see also *"2.4.5 The importance of local farmers for biodiversity, agricultural intellect and our global health"* on page 40).

Innovation of the Vietnamese agro-food industry is needed to enhance the competitive position of the local companies within a globalising industry. A way to trigger innovation is by creating dialogue and interaction. This follows a creation view for business opportunities. This view stresses that opportunities do not arise from pre-existing markets (Alvarez & Barney, 2007; Keskin, 2015) but rather from "the imagination of individuals by their actions and their interactions with others" (Gartner *et al.*, 2010 p. 114).

The current relationship between the companies and customers was studied as well as how this relationship could be intensified to stimulate new product and service development for the urban middle class of Vietnam. The third research question was aimed at, from a human centred design perspective, understanding the agro-food sector's current innovation capacity and capability for food products and services.

RQ3: What is the current human centred innovation capacity and capability of the local agro-food companies in Vietnam?

Successively, this research question was advanced with a question of how to improve the situation. Part of the solution presented at the end of the studies in Chapter 1 and 2 is for local food companies and customers to work together. To create a dialogue between them and form a future of sustainable consumption that is Vietnam's own. This proposed solution forms the basis for research question 3 and 4.

Co-design is a way to structure the interaction and create dialogue, specifically on products and services. Therefore, it was introduced to agro-food producers and the Vietnamese urban middle class consumers. Co-design workshops were selected specifically because it provides a structured way of personal, direct and physical interaction with consumers. The premise is that it could help to both strengthen the competitive position of local firms (and thereby strengthen the countries' economy) as well as offer a platform for dialogue, with sustainability being the trigger for dialogue.

> *RQ4: how does co-creation add to the human centred innovation capacity and capability of the agro-food companies in Vietnam?*

1.2.5   CONCLUDING ON THE SCOPE

The scope of the problem started broad with sustainable development in emerging economies. But one cannot solve all problems in one day, or in one PhD for that matter, so focus was
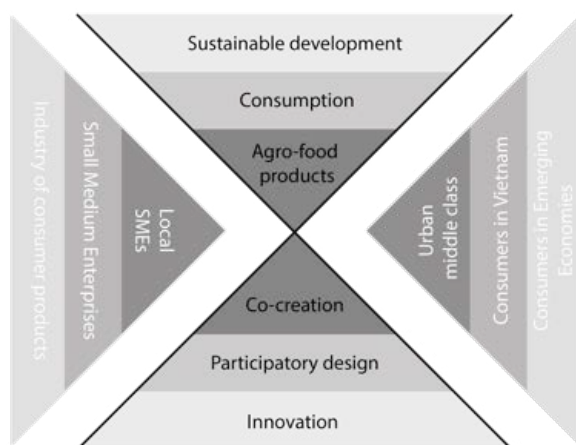
Figure 5. Framework of the scope of this research. An overview of themes.

needed. The first choice of scope was to study sustainable consumption specifically among the Vietnamese urban middle class consumers. Next, the scope was narrowed by focusing on a specific type of companies: local SMEs in the agro-food sector. The last step of narrowing the scope was by focusing on triggering innovation through creating a dialogue between the selected companies and consumers in a specific way: through co-design workshops. Fig. 5 gives an overview of the four angles that defined the scope of the research.

1.3 METHODOLOGY

1.3.1 DESIGN METHODOLOGY, PERSPECTIVE AND INTERVENTION

Design is used in the methodology in three ways. First, a design-based research methodology was used to study the complex situation. Second, a design perspective or lens was used to approach the complex situation. Third, a design intervention was proposed and tested in the complex situation.

A design-based research methodology was used for this research, as opposed to evidence or fact based research, because it is able to characterise a situation in all its complexity. The goal of this research is to analyse the less favourable and complex transition of more environmental impact of consumption in Vietnam but also to intervene in this complex situation. The latter means that the study involves development of something new, also reflected in the research question, to intervene in the situation. This is best done by a design-based research approach.

Design-based research studies phenomena in real life settings; it includes the identification of specifications; it includes multiple variables; and it follows a flexible set of planned procedures that is revised according to its success in practice (Barab & Squire, 2004; Collins *et al*, 2004). The use of a design-based research method therefore enables embracing the complexity, rather than simplifying the fairly understudied problem of sustainable consumption in Vietnam; as well as enabling a progressive development of an adequate co-design procedure in real-life settings. The GetGreen Vietnam project and its network provided opportunities and access to

these real-life settings and the specific companies and consumers in Vietnam. The opportunities of gathering in-depth contextual data on sustainable consumption and co-design are unique aspects of this research.

Design-based research projects generally include three steps: exploration of the situation in the context, specification and decomposition of the design problem and proposition of solutions. This is different from research projects where a solution is proposed, and then this solution is decomposed followed by testing it in the context. The human centred nature of the problem, sustainable consumption and the middle class consumers in Vietnam, makes a Human Centred Design (HCD) approach specifically suitable for this research. This specific approach makes that: (1) the situation of the consumer is studied first, (2) the co-design process is decomposed second, and finally (3) the proposed co-design solution is tested in the context. That is also how this research unfolded.

The first half of the studies aimed at understanding the urban middle class consumer in Vietnam in the context (RQ1 and RQ2). These studies made use of a combination of qualitative and quantitative methods. This ensured both an in-depth understanding from for example interviews with individuals as well as a validation of these results with larger groups from the quantitative data. The specific methods are discussed in the chapters in Part II for each study. A design perspective was used to approach sustainable consumption in these studies. This perspective made that the focus of consumption and sustainability was constructed around products and services. Consumption in this thesis is therefore understood to include buying, using and the disposal of products and services.

The second half of the studies (RQ3 and RQ4) was aimed at a human centred orientation during the design process among Vietnamese agro-food companies with co-design as trigger. An initial flexible set of procedures for co-design, which is also a method of human centred or participatory design, was developed. A full overview of how the method was developed and what the final toolkit looks like can be found in *"2.6 Developing a co-design toolkit"* on page 51. The co-design workshops were a possible solutions to improve the situation while also still decomposing the problem. The toolkit of the final co-design procedure was tested for the specific situation of sustainable consumption and agro-food products in Vietnam. This test

STUDY DESIGN PER RESEARCH QUESTION

RQ1: In what way is the urban middle class of Vietnam currently contributing to environmental sustainability in their buying, using and disposal of different product categories? *(Part II, Chapter 1)*

- Consumer survey (158 respondents)
- Consumer focus groups (5 groups, 2 meetings)
- Consumer in-depth interviews (5 people)

RQ2: How can the middle class of Vietnam be stimulated towards buying, using and disposing products and services more sustainably? *(Part II, Chapter 2)*

- Consumer survey before and after the GGVN intervention (604 participants)
- Monitor reports of each GGVN group (26 groups)

RQ3: What is the current human centred innovation capacity and capability of the local agro-food companies in Vietnam? *(Part II, Chapter 3)*

- Company in-depth interviews (14 companies)

RQ4: In what way does co-creation add to the human centred innovation capacity and capability of the agro-food companies in Vietnam?

RQ4.1: What co-creation models are available? *(Part II, Chapter 4)*
- Literature study (50 models)

RQ4.2: In what way does a co-design workshop trigger human centred innovation through dialogue between the Vietnamese urban middle class and local agro-food SMEs? *(Part II, Chapter 5)*

- Co-design workshops (14 + 2 pilot companies)
- In-depth interviews after the workshops (14 + 2 pilot companies)
- In-depth interviews 3-6 months after the workshops (9 companies)
- Expert review of outcomes of the workshops (14 companies)

in real-life settings is the subject of the final chapter of Part II, chapter 5. For each research question a combination of methods has been developed to be able to describe all the aspects of the complex problem (see *"Study design per Research question"* on page 21).

1.3.2   TRANSFERABILITY OF RESULTS AND LIMITATIONS

For the problem in this research, the methods proved to be useful in reaching a conclusion. A similar approach would be applicable for this type of research in other contexts. However, the usual caution should be taken into consideration when the conclusion of this research is expanded to other contexts of development.

Complexity of the problem

The advantage of design-based research is that it is possible to include the complexity of real life situations, but it also has its limitations. Challenges lie in the resistance to experimental control; the large amount of data following from a combination of quantitative and ethnographic analysis; and comparing across designs (Collins *et al.*, 2004).

As has been demonstrated multiple times now, the consumption of the Vietnamese middle class is changing fast. Control groups in these fast changing real-life settings are relatively resistant to experimental control. Therefore, a different approach was used: a baseline has been established in the first chapter and study of Part II on the current sustainable consumption behaviour of the urban middle class. Second, the large amount of data was indeed challenging. But, a combination of quantitative and ethnographic analysis has proved to be valuable, especially in Part II, Chapter 2. Last, there was no comparison across designs of the co-design procedure but a progressive development and adaptation that took place over the course of the 16 workshops.

Comparing Vietnam to other countries

This research studied the sustainable consumption in Vietnam intensely. The focus on gathering in-depth data in the context did not allow for data gathering in other contexts for comparison, neither did the funding support that. Comparisons with other contexts and countries are therefore only made very cautiously and based on literature. In the future, data from multiple

contexts should improve interpretations of insights from the individual contexts.

A sample of 16 agro-food companies

The mostly qualitative approach of the studies on the companies has enabled a deep understanding of the agro-food companies innovation and co-design skills. The 16 co-design workshops are a limited sample but a repetition of findings was shown after the first 12 workshops. This indicates that the results will be fairly generalizable to other Vietnamese agro-food firms.

The method of co-design was developed specifically for food companies but it is assumed that it is also fairly easily generalised for other industries. The co-design method was piloted with a fashion and a mobility company. It showed to mostly work positively in similar ways, but this has not been studied in-depth. The main difference was that for these other consumption categories there was no trigger for dialogue through concern like there is for food in Vietnam. Therefore, in other industries extra attention should be paid to motivating and interesting consumers to join.

A sample of motivated customers

Many of the customers involved in the studies were contacted through the Get Green Vietnam network or through the network of the more sustainable oriented companies. This makes that the majority of the people in this research had already shown some interest in the topic of sustainable consumption. For the different studies the focus was on the front-runner sustainable customers in Vietnam, also given the opportunities within GetGreen Vietnam. However, for the baseline study in Chapter 1 the mix of people was quite diverse. These first studies on sustainable consumption among the innovators of society gives an overview of the potential. It is important that other people in Vietnam will follow the lead of these front-runner customers but it is not studied how the rest of Vietnam can follow.

What people say, versus what people do

There is a limitation evident with interview and survey data: it is based on what people say they do and not on what they actually do (Leppanen, 2014). However, the risk of a large difference between the two was mitigated. This was done by creating an open and non-judgemental

atmosphere in familiar settings; by visiting people at their houses or offices; and by asking people to demonstrate how they would do things.

Limitation in time

This research was a first investigation to be able to define a long-term strategy for Vietnam in the future. In this research there were different moments of data collection, but only over a short period of time. For the GGVN project consumer data was collected before and after the two-month program. For the co-design workshops, company data was collected before and three to six-month after the workshop. This allowed for some indication of effects over time, despite the short period of time, but changes on the longer run have not been measured.

Position of the researcher

The researcher was actively involved in organising the different studies and gathering the data. Because she was almost always present, she was able to ensure consistency in the data collection (to the extend to which that is possible in these complex real-life experiments). This made that she was able to reflect in action as well as on the actions (Schön, 1983) and objectify the different experiments and contribute to the validity of the results.

Practically this means that the researcher was able to gain deep insights, first handed. For example in interviews, if clarification was needed of an answer, this could be directly solved. Also, there was less possibility of misinterpreting data gathered by others. On the other hand, it could also have been that the researcher sometimes was getting too close to the subject and too passionate that the wider view on the subject could have been overlooked. However, there were many other stakeholders and partners intensely involved in the research from, among others, the GetGreen Vietnam program. Also, the different studies have been subsequently peer-reviewed in scientific journals and at scientific conferences. Together, this mitigated the danger of tunnel vision limited and a diversity of subjective opinions available to the researcher.

There is another aspect to this: the different background of the researcher than that of Vietnam and the people in the studies. This created language and cultural barriers that worked in the advantage and disadvantage of the researcher. A disadvantage was the language barrier,

which could lead to missing nuances. However, translators were present for interviews and also recorded and translated again. A second aspect was the possibly culturally in-adapt but unintentional behaviour of the researcher. This could create uneasy situations, however, it often worked in the advantage of the researcher: being allowed to ask more personal questions. Last, the researchers initial greenness in Vietnam allowed for wonder others would not have had. This allowed for a unique and deep insight into the context.
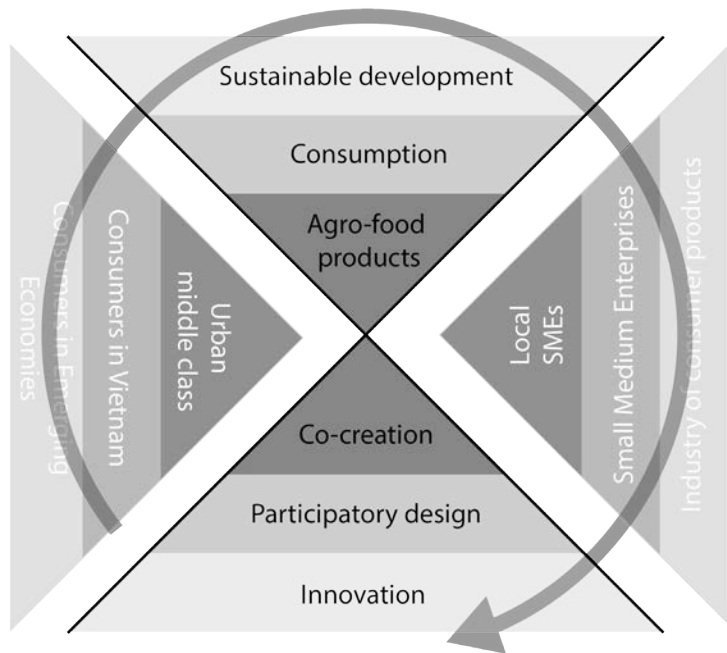
Figure 6. Framework of topics of this research. The clockwise arrow indicates the order of topics in the Background.

2. Background

2.1 EMERGING VIETNAM

2.1.1 DOI MOI

Vietnam is a country in South-East Asia that has transformed from one of the poorest countries a few decades ago to one of the fastest growing economies in the world.

The Vietnamese population endured years of war in the 1960s and 1970s, after that years of economic depression and poverty followed. In the 1980s Vietnam

Figure 7. Framework of research topics, part 1.

was one of the poorest countries in the world: the yearly per capita income was 170 USD (Wolff, 1999); the average daily food consumption did not exceed 1500 calories (Szalontai, 2008); and inflation of the local Vietnam Dong was at a peak of 775 per cent by the end of 1986 (Kalra *et al.*, 2016; Nguyen *et al.*, 2012).

Soon after, things started to change. A program of economic reform, called Đổi Mới, was officially announced in December 1986 (Szalontai, 2008). The government of the Democratic Republic Vietnam initiated this program to build a socialist oriented market economy. The Communist Party of Vietnam started to allow (and later encourage) privately owned enterprises in commodity production. The 1992 Constitution recognized the role of the private sector officially and private land use was regulated in a Law on Land (2003, pursuant to the 1992 Constitution of the Socialist Republic of Vietnam).

With an incredible speed the economy began to develop. International trade and export intensified. Trade was no longer based on aid-financed imports, allocated according to the government development plan, but basically determined by market forces (Beresford & Phong, 2000). Agricultural production intensified, with a focus on producing food (as opposed to energy). This included a more intense use of chemical fertilizers, pesticides and machines (Szalontai, 2008). These changes started years before in other countries, known as the Green Revolution (Hazell, 2009). And, in 1995 the US finally lifted the then 20-year-old trade embargo

against Vietnam, which brought economic growth to an even higher level.

By the late 1990s, the success of the business and agricultural reforms under Đổi Mới were evident. In less than 10 years poverty almost halved, from 58% in the early 1990s to 31% in 2000 (Worldbank, 2012). More than 30.000 private businesses had been created and by the beginning of the 2000s the economy was growing at a speed of more than 7% a year (USA International Business Publications, 2007). The following years, between the early 2000s and 2008, poverty would halve again to 14,5% in 2008. This made that a new Poverty Assessment was finalized in December 2012 that surpassed the "basic needs" poverty line of the early 1990s (Worldbank, 2012). Now, especially in urban areas, poverty is quite low, with official poverty rates of 6,9% in 2010 (Worldbank, 2012, p.4).

Today, Vietnam is part of Emerging Asia, along China, India, Indonesia, Malaysia, the Philippines and Thailand (IMF, 2016). The economy is a fully functioning market economy. After a process of eight years, Vietnam became a member of the World Trade Organization (WTO) in January 2007. The country transformed, with a crucial role for the Law on Land, from a food-deficit country in the 1980s to one of world's largest rice exporters (Worldbank, 2012, p.11).

2.1.2   SUSTAINABLE CONSUMPTION IN VIETNAM

A rapidly expanding middle class is emerging. Some estimate a growth as high as growing from 12 million in 2012 to 33 million in 2020 (BCG, 2013). In Part II a detailed definition of the Vietnamese middle class is given (Part II, Chapter 1, *"1.2.5 A workable definition of Vietnam's middle class"* on page 110). While the reduction of poverty is a very positive development, the expansion of the middle class also brings along negative consequences. The emerging Vietnamese middle class consumes more, but also differently. Consumption patterns are changing and goods that were not accessible before are becoming widely available. More energy, water, material in all sorts and forms is needed for production, transport, consumption and disposal.

If we expand our view to all Asian emerging economies, a similar development is seen. One can

imagine the possible role these countries can play with their large populations (think of China and India) in contributing to environmental sustainability. If nothing is done, the negative effects can be equally far reaching which makes sustainable consumption in emerging Asia urgent. Vietnam is not even a small player in this picture; it is comparable in country size and population to Germany, with around 95 million people. Consumption and the importance of focusing on sustainability in Vietnam is given more detail in Part II, Chapter 1 *"1.2.2 A focus on sustainable consumption in Vietnam is important"* on page 107 and "*2.2.1 Sustainable consumption in Vietnam*" on page 140.

The government is outside the scope of this research but a few words can be dedicated to it. In developed countries the tendency of government is to focus on strategies to reduce and change consumption for a more sustainable society. In developing countries the tendency of government is to focus on strategies of consumerism to make products available to more people and reduce poverty. Emerging economies are caught in the middle of the two strategies. In Vietnam the government has been working on poverty reduction while industry has been working on how to answer to the needs and desires of the emerging middle class consumers. The industry in Vietnam is slowly paying more attention to better, safer and more sustainable products (Jin, 2015). This is the effect of both international businesses operating in Vietnam and local businesses exporting to international markets.

2.2   SUSTAINABILITY AND CONSUMPTION

2.2.1   SUSTAINABLE DEVELOPMENT

In 1972, the club of Rome started the first global discussion on sustainable production with their publication 'The Limits to growth: a global challenge" (Meadows *et al*, 1972). The term sustainability gained more attention in the eighties. In 1987, with the report
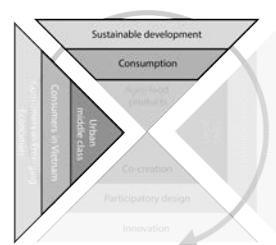
Figure 8. Framework of research topics, part 2.

of the United Nations Brundtland Commission, a definition was shaped that is now widely and commonly used:

> *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (WCED, 1987, p. 43).*

This broad definition is also used in this research. The definition is purposely kept broad because in Vietnam sustainability is still an unfamiliar concept. There must be room for Vietnam to propose a more specific definition itself that fits its context; this research is a step towards that process. There is one word must be read with attention: *needs*. This word is purposely used and thus does not include desires. Meeting the needs of the present is therefore not keeping the present the same, or providing needs in the same way, nor meeting all needs and desires of the present, but providing the present needs in a way that does not limit the ability of future generations to meet *their own needs*. These last words show that the definition also does not claim that the needs of one generation are necessarily the same as the present generation or previous ones. This shows that the definition allows for adaptation over time. An example is Internet access, this was not even a desire a few decades ago. Now, based on a UNESCO standard-setting report (Dutton *et al.*, 2011), the UN Human Rights Council has proclaimed it a basic human right.

2.2.2 SUSTAINABLE CONSUMPTION

Only after 20 years of the publication of the Club of Rome, sustainable consumption was included in the global discussion. For a long time consumption was seen as a phenomenon that contradicts sustainable development. Previously the focus was also mainly on sustainable production and technical solutions such as cleaning up polluting processes and produce greener products. These purely technical approaches fail to address the "crucial dimension of human choice in implementing sustainable technologies and in changing unsustainable consumption patterns" (Jackson, 2005, p.20).

The connection between global environmental change and 'wasteful' and 'inefficient' consumption patterns was finally recognized in the early nineties. In 1992, at the Environment and Development conference of the UN in Rio de Janeiro (also known as

the Earth Summit), the concept of sustainable consumption was officially introduced. Today it is generally accepted that "promoting sustainable consumption is equally important to limit negative environmental and social externalities as well as to provide markets for sustainable products" (OECD, 2008, p.7). Different definitions of sustainable consumption have been proposed but in this research the definition of Hertwich (2005) is preferred. This definition is preferred because it includes the freedom to develop one's potential in combination with replication across the whole globe, as well as that it refrains from using the word 'better'.

> *"Sustainable consumption patterns can be defined as patterns of consumption that satisfy basic needs, offers humans the freedom to develop their potential, and are replicable across the whole globe without compromising the Earth's carrying capacity" (Hertwich, 2005, p. 4673).*

The definition demonstrates the rights people have in Vietnam: to develop in the same way as people in Western countries do. But, it also shows that people in Vietnam have equal responsibilities to do this in such a way that it does not comprise the Earth's carrying capacity. The Earth's carrying capacity in this research will be simply referred to as the environment. It is important to note that in this research sustainable consumption is defined as including the buying, using and discarding phase of consumption. In Part II more detail is given of how this definition is operationalised (see Part II, Chapter 1, *"1.2.1 Perspective used for sustainability"* on page 106).

2.2.3   STRATEGIES TOWARDS SUSTAINABLE CONSUMPTION

The debate of what consumers can (or should) do are on going and often centres around the question to concentrate on consuming differently or consuming less (Douthwaite, 1993; Ehrenfeld, 2008; Martínez-Alier *et al.*, 2010; Schumacher, 1973; Spangenberg, 2010; Tukker *et al.*, 2008; UNEP, 2011; Van Den Bergh, 2011). Some argue that a radical change and de-growth are needed in affluent societies (Kallis, 2011; Slesser *et al.*, 1997; Trainer; 1996). The dilemma that arises is whether it is it even possible to reduce overall consumption with an ever-growing world population. More on growth and de-growth can be found in Part II, Chapter 2, *"2.2.2 Strategies towards sustainable consumption"* on page 141. In this research the focus is on both growth and de-growth. Vietnam is a country that needs growth to elevate the lower classes

of the population out of poverty. On the other hand, the middle class of Vietnam is quickly acquiring a lifestyle that also calls for the need of de-growth strategies (for instance: decreasing the use of plastic bags). Therefore, current growth models and current consumer products and services might not be the right strategy forward. This duality makes Vietnam a complex but interesting case for sustainable consumption strategies.

It is also important that within this complex environment, Vietnam finds its own voice while learning from knowledge, experience and mistakes from developed countries. Anticipating on future results, this is one of the reasons why participatory design was brought forward as an interesting first strategy for Vietnam, because it allows Vietnam to create its own strategy and direction.

2.3   BEHAVIOUR CHANGE AND DESIGN

2.3.1   BEHAVIOUR CHANGE THEORY

The following background on behaviour change theory is meant to provide reasonable insight into what is needed for more sustainable consumption behaviour, also from a design point of view. It provides the needed basics which is only a glimpse of the body of literature on behaviour change.

There are many different models that describe behaviour, but all models describe behaviour as the outcome of interplay of different factors and choices. These factors are influenced by the person's own beliefs, attitude as well as the context of a person. Consumption behaviour of a specific product or service is also dependent on the interplay of personal and contextual factors. A personal factor could be for example the preference for products with certain colours; however, this preference is also shaped by the social and cultural context. A contextual factor can be the infrastructure available to use a certain product, such as the decent availability of electric charge stations for electric cars, but this is also dependent again on personal perception of 'decent availability'.

Tukker *et al.* (2008) describe three components needed simultaneously for sustainable consumption behaviour: motivation/intent, ability and opportunity. Many behaviour change theorists also use these three components as the basis for their models. In this research the choice has been made to describe behaviour according to the Motivation, Opportunity Ability (MOA) model (Ölander & Thøgersen, 1995). The MOA model (Fig. 9) explains the intention to engage in certain behaviour as a result of personal beliefs and attitudes as well as the social norms for that behaviour. Intention in the model is moderated by ability and opportunity before resulting in the behaviour. In Part II more detail is given on the use of the MOA model in this research as well as on other behaviour change theories (Part II, Chapter 1, *"1.2.4 Intention-action gap for sustainable consumption"* on page 109 and Chapter 2, "*2.2.2 Strategies towards sustainable consumption*" on page 141).

In behaviour change theory special attention is given to a specific type of repetitive behaviour, a habit. When people repeatedly display the same behaviour in certain situations this is called a habit. Habits are continuous loops of problem solving. Hunger for example is an ever-reoccurring problem and we solve it by eating, or consuming food (Ehrenfeld, 2008).

Showering is a repetitive behaviour that solves the problem of hygiene. This repetitive behaviour is interesting because it is hard to change, but if these habits are changed, they can have a great effect because of the repetition. Therefore the theory of breaking habits and reinstalling new habits is crucial for sustainable consumption.

Lewin (1951) was one of the first to describe a process of breaking behavioural patterns. He describes the process in a simple way, which, despite some criticism since the eighties, makes it still valuable decades later (Burnes, 2004). Lewin
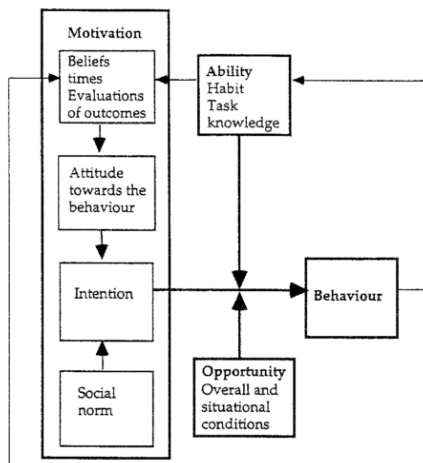
Figure 9. The MOA model of Ölander & Thøgerson (1995, p. 361)

explains behaviour change according to three stages: unfreeze, change and refreeze. The first stage of ´unfreezing´ is when consumers' unconscious behaviour or habit (frozen behaviour) is made conscious behaviour again (unfrozen behaviour).

This means that for the context of sustainable consumption and Vietnam, currently the middle class is 'unfreezing' certain habitual patterns due to the increasing prosperity (increasing opportunity and ability for consumption). This makes the timing interesting because it also allows for new (more sustainable) behaviours to be frozen into a new habitual pattern. In a way, this makes that in Vietnam people are already one step on the way. On the other hand, while old patterns are being unfrozen, there are also new more unsustainable habits arising. When these are frozen into new habitual patterns they are harder to change. This makes that it is even more crucial to act now in Vietnam. Last, there is one more interesting aspect and that is the possibility to still keep certain habits frozen and not unfreeze them in Vietnam. That way there is no need for the difficult process of bringing certain old habits back, as is happening or needed in developed countries now.

2.3.2 THE POSSIBLE INFLUENCE OF DESIGN ON SUSTAINABLE CONSUMPTION

Design in this research is used to refer to the process of developing a product or service, which goes beyond aesthetics. A design process includes defining a design problem or design challenge, designing specifications, generating ideas, simulation and evaluation and decision making (Roozenburgh & Eekels, 1995). The skills corresponding to these processes are in this thesis dubbed 'formal design skills'.

Design and sustainability can be regarded as somewhat in a love-hate relationship. Viktor Papanek was one of the first to criticize the role of design in the early seventies in his book *Design for the Real World* (1971):

> *"Advertising design, in persuading people to buy things they don't need, with money they don't have, in order to impress others who don't care, is probably the phoniest field in existence today. Industrial design, by concocting the tawdry idiocies hawked by advertisers, comes a close second..." (Papanek, 1971).*

Sustainability and design are more commonly associated with the production than the

consumption of products. This is not unreasonable. A design process determines the production techniques, the materials and how a product is discomposed. When sustainability is taken into account during these processes, a lot of improvements can be made in how a product impacts the environment. This is often identified as eco-technology or clever design (Bhamra *et al.*, 2015).

However, design can also influence how a product or service is used and how users discard it. This is where the connection between design and sustainable consumption becomes apparent as well as that of design and unsustainable consumption. It has been acknowledged that environmental impact of a product is highest in the use phase, especially for energy consumption of durable consumer goods (Brezet & Van Hemel 1997, p.152; Wever *et al.*, 2008, p.9).

The last decade several studies classified the different available design strategies for sustainable behaviour (Boks, 2012; Lilley *et al.*, 2005; Wever *et al.*, 2008). The most recent classification

Figure 10. A two-dimensional classification of the 7 design interventions of Bhamra et al., (2015).

includes seven design interventions, ranging from the very much user dependant intervention eco-information to the completely product dependant intervention of clever-design of (Bhamra *et al.*, 2015). Bhamra *et al.*, (2015) also connect these seven interventions to three processes of behavioural and habitual change (guiding the change, maintaining the change, ensuring the change). It is positive that more researchers are paying attention to design in combination with behaviour change, and it is important to advance the field. However, because the publication appeared after the studies of this thesis had been conducted, it did not have a direct influence on the studies.

To understand the connection of these seven design interventions to participatory design, they have been categorized in a new model (Fig. 10). The new model explains the improved environmental performance of the design intervention according to stimulated conscious behaviour change as well as needed level of participatory design. Specifically, the two dimensions are: (1) the degree of enabling user's understanding of their impact promoting conscious behaviour change, and (2) the effort required by designers to understand the users (sustainable) behavioural patterns.

To make it more tangible, and anticipate on the next chapter on sustainable food consumption, each of the seven possible design interventions has been provided with an example of refrigerator use. In the future, this model could be useful to stimulate more participatory design for sustainable behaviour change.

2.4 SUSTAINABLE FOOD CONSUMPTION

2.4.1 INTRODUCTION

The last decades, sustainable food consumption has received a great deal of attention in scientific (Wright & Middendorf 2008) and popular literature. In Vietnam
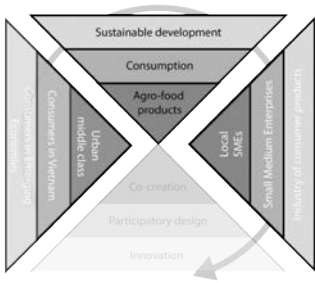
Figure 11. Framework of research topics, part 3.

sustainable food is also a rising topic, both for consumers and industry. After the first two studies in this research, the food sector surfaced as a promising category for sustainable consumption in Vietnam because of a motivation among the urban middle class (Part II, Chapter 1, *"1.5 Discussion"* on page 121). To understand what sustainable food consumption entails, and how it was understood in this research, a framework has been developed which is presented towards the end of these paragraphs (*"2.4.9 Framework for sustainable food consumption"* on page 45).

2.4.2   THE IMPORTANCE OF SUSTAINABLE FOOD PRODUCTION FOR GLOBAL RELIEF OF ENVIRONMENTAL PRESSURE

Actually, the world is producing enough food to feed everyone (FAO, 2012); yet, almost a billion people today are chronically malnourished and live with hunger (FAO & WFP, 2010). This makes the future of food consumption one of the main challenges in the world today (Searchinger *et al*, 2013). There is a need for food production in a way that is less degrading for the land, uses less energy, less water, respects for biodiversity and climate on a global scale and that is able to feed the one billion malnourished.

The Food and Agriculture Organization of the United Nations (FAO) states that agriculture and food production are among the leading causes of environmental pressure (FAO, 2012). Today, agricultural production covers half of the world's land; it is a major cause of deforestation, degradation of land and loss of biodiversity; it is responsible for 70% of total water use. On top of that, food also accounts for 30% to 40% of a countries' energy consumption (FAO, 2012; Verain *et al.*, 2012).

It is estimated that "under business as usual conditions, the growing demand for food and non-food biomass could lead to a gross expansion of crop-land in the range of 320 to 850 million hectares by 2050" (UNEP, 2014, p. 2). The higher range of this crop-land estimate would be almost half the size of Brazil. It is also estimated that by 2030 China alone would need an additional 21% of cropland (Yu *et al.*, 2016). All the extra cropland is needed to support an increasing demand for food that is driven by population growth, urbanization, income growth and related changes in diet (Yu *et al.*, 2016). This demonstrates that the emerging middle classes

in Asia have an important role in the sustainable development of the global food chain and food demand.

2.4.3   THE ROLE OF SUSTAINABLE DIETS

At the FAO conference on *Sustainable diets and biodiversity directions and solutions for policy, research and action* a definition of sustainable diets was proposed that was followed in this research:

> "*Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy lives for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable, nutritionally adequate, safe and healthy; while optimizing natural and human resources"* (FAO, 2010, p.27).

Urbanization and rising income drive modifications in diet. This often comes with easier access to highly refined and processed food products and a higher intake of animal products. Processed foods are attractive: they are easy to prepare and often come ready to eat while being inexpensive. This leads to a higher caloric intake. With a greater intake of animal products, the intake of fibres often decreases while that of energy and fat increases. In general this results urban diets to contain with more saturated fats, salt and sugar but less micronutrients (Isenhour, 2011; UNEP, 2014). On top of that, jobs of people in urban areas often require less energy compared to jobs of people in rural areas, this causes fewer calories to be burned and leads to an increasing number of people suffering from obesity.

In Vietnam a modification in diet, driven by the rising income and urbanization, is clearly visible: the number of supermarkets is growing; the consumption of processed foods as well as that of animal products is increasing; and the amount of people suffering from diet-related diseases is rising. For example, a drastic increase in diabetes in Vietnam was shown: it roughly doubled in the years between 2010 and 2014 (Pham & Eggleston, 2015). A shift in diet, or curbing the modification process of the Vietnamese urban middle class is vital for both the environment and health.

A shift in diet and reducing waste are two factors that can contribute largely to a reduction of the environmental impact of our food consumption (Foley *et al.*, 2011). A sustainable diet

of sustainable food consumption should delink biofuels from our food markets; increase the efficiency in the use of biomass; as well as control our overall consumption of biomaterials (UNEP, 2014). These measures should, together with improving land management and restoration of degraded land, save 161 to 319 million hectares of land by 2050 (UNEP, 2014).

2.4.4   MEAT AND DAIRY

For emerging economies an increase in meat consumption has been identified as one of the major causes of their increased pressure on the environment (Meyers & Kent, 2003). The increasing demand for livestock products has a substantial effect on natural resources. About one-third of global cereal production is fed to animals. Also, raising kettle involves biological processes that require energy and cause losses. The conversion efficiency of plant into animal matter is a bout 10% (Godfray *et al.*, 2010).

Stimulating more people to adopt vegetarian diets is one of the most obvious strategies for food security and increasing caloric intake on a global scale. However, globally an opposite development is seen of an increasing demand for meat and dairy products. This can be largely attributed to the increased wealth of consumers globally and of lately especially China and India (Godfray *et al.*, 2010).

2.4.5   THE IMPORTANCE OF LOCAL FARMERS FOR BIODIVERSITY, AGRICULTURAL INTELLECT AND OUR GLOBAL HEALTH

In many (developed) countries an increase in corporate agriculture and competition on price have threatened the existence of small-scale farmers and their unique localised production methods (Humphery, 2010; Isenhour, 2012; Probyn 2011). This shift has, over time, caused a significant loss of agricultural intellectual capital and has estranged consumers from the agricultural production process (Dolan, 2002; Isenhour, 2011).

Local farmers (or local agro-food SMEs) are important for a diverse and balanced diet as well as for intellectual agricultural capital and the familiarity of people with means of production. Their use of indigenous plant and a diversity of animal products contributes to environmental sustainability and the protection of biodiversity, it also makes it less likely for a high rate of

diet-related diseases to develop (FAO, 2012; Frison *et al.*, 2006). The FAO (2012) finds that "countries, communities and cultures that maintain their own traditional food systems tend to consume foods involving a higher diversity of crops and animal breeds". Another benefit of traditional and local food systems is the appeal to national pride and identity that arises when the value is understood and appreciated (FAO, 2012).

The loss of agricultural knowledge is shown in the plant species grown world wide. Over time, at least five thousand plant species have been domesticated. The industrial food chain uses only three per cent of them (ETC Group, 2009). Nowadays, just 150 plant species are grown commercially but global crop production concentrates on only twelve of them and the bulk of human energy needs are supplied by only three them: maize, wheat and rice (FAO, 2012).

There is a small disclosure that needs to be mentioned on this display of the importance of local small-scale farmers. It must not be understood as the solution for our future food system, this is not an advocacy of a neo-romanticist view. No, both large and small and local and international agro-food companies are needed in a future food system. This paragraph is to emphasize the importance of them and the threat they, and thereby our food system, are exposed to.

2.4.6   FOOD MOVEMENTS AND TRENDS

A large number of consumer-based food movements arose in the last decades. The scientific community has produced an equal large number of studies on them (e.g. Isenhour 2011; Verein *et al.*, 2012; Wright & Middendorf, 2007). The different movements vary greatly and include movements such as animal welfare, fair-trade, local farmed food, slow food, organic farming and vegetarian or vegan diets. Most movements develop from concerns with the current food system grounded in environmentalism (Nestle, 2009; Nestle, 2010; Reisch, 2011). But, some also reflect a variety of capitalist concerns including those associated with human rights, social justice, and unfair trade relations (Johnston, 2007).

The movements all incorporate an aspect of sustainable diets or sustainable food consumption as in the definition of FAO (2010) shown on the previous pages. In more specific definitions of sustainable food consumption often a statement about the value to the people who eat

it (safety, nutrition, amount, etc.); a statement about the value to the people who produce it (fairly produced, honest prices labour conditions); or a statement on the continued value for people of the future (food safety, soil protection, natural resources) is included (Giovannucci *et al.*, 2012). Movements often evolve around one, two or all three of these values. Sustainable consumption in general (not specific for food) also always requires striving to produce less waste, using less water and less energy (DEFRA, 2008).

2.4.7   ORGANIC FARMING AND ORGANIC FOOD

There is one movement in particular that has been getting a lot of attention: the organic movement. It is one of the most studied movements regarding environmentally friendly food choices over the last two decades (see for example Grunert & Juhl, 1995; Schifferstein & Ophuis, 1998; Magnusson *et al.*, 2003; Saba & Messina, 2003; Kihlberg & Risvik, 2003; Zander & Hamm, 2007; Goetzke & Spiller; 2014). This movement promotes food production that in simple terms is about using less chemicals, more natural fertilizers or pesticides and protecting biodiversity to benefit the environment. Some claim, however, that the fair-trade movement is a more progressive movement than the organic or environmental movement because it focuses on decent working conditions, fair prices for goods and services, and ensuring reasonable security for the producers through a commitment from buyers (Raynolds, 2000). Globally this could decrease the gap between North and South and make the distribution of wealth more equal.

Consumer attitudes to organic foods are complex, not only linked to health and the environment but also to ethics and identity. Although there are studies that dispute a nutritional difference (Dangour *et al.*, 2009) there are consumers that believe organic foods are healthier and more nutritious (Grankvist & Biel, 2001; Kearney, 2010). Health, related to the value security is one of the strongest arguments often found for purchasing organic food (Aertsen *et al*, 2009; Goetzke & Spiller; 2014; Magnusson *et al.*, 2003; Verein *et al*, 2012). Security is also closely related to fear, which has also been found of influence on organic purchases (Aertsen *et al.*, 2009; Roitner-Schobesberger *et al.*, 2008), especially in combination with food safety in less developed countries.

The well-known critique on organic farming is that it would not able to feed the whole world because more land is needed compared to conventional (and large-scale) farming (Badgley & Perfecto 2007; Tillman *et al.*, 2002). Taboos in organic farming, for example on genetic modification or certain types of pesticides, limit the options to create the needed change in our food system. (R. Rabbinge, personal interview with the author, March 11, 2015). It is not desirable to employ organic farming, as it is practiced now, as the sole method for all our food production (Kearney, 2010; Tillman, 2002). There would not be enough land to feed everyone, leaving the one billion malnourished and hungry. Again, like local farming, this highlight of organic farming must not be interpreted as a sole direction for our future food system, but as an advocacy for more cross-over between organic and non-organic farming towards a new kind of food system.

With only 2% of global retails the market for organic products is still relatively small, but it is growing significantly (FAO, 2012) and thus provides trading opportunities for developing countries (Paull, 2010; FAO, 2012). The growth of the organic market is also noticeable in countries across Emerging Asia, and studies on organic food have turned towards (emerging) Asia, such as Taiwan (Chen, 2007), Thailand (Kantamaturapoj *et al.*, 2013; Roitner-Schobesberger *et al.*, 2008), China (Teng & Wang, 2015; Xie *et al.*, 2015; Chen *et al.*, 2014) and India (Yadav, 2016). In these studies it is shown that the studied consumers are highly concerned about food safety related to their health. Also, certification and trust play important roles in organic food purchases.

Related to trust and certification, there is a common practice found in towns and villages across developing Asia: the personal guarantee of the farmer or seller is usually considered sufficient (Kantamaturapoj *et al.*, 2013; UNCTAD, 2004). It is also found that in developing countries the government rarely plays a role in the early stages of organic agriculture (UNCTAD & UNEP, 2008). For the case of emerging Vietnam and this research, these findings provide additional arguments to focus the studies on an alliance between consumers and industry towards a new kind of food system.

2.4.8   FOOD WASTE

It is estimated that about one-third of all food produced for human consumption is lost or wasted every year, mounting to about 1.3 billion tonnes annually (FAO, 2011). But it is not only the food that is wasted; the energy, materials and water that are used to produce, package and transport the food products are also wasted. In many developed countries the single largest component of solid waste that ends up in municipal landfills and incinerators is food waste (Hall *et al.*, 2009). The distribution of losses differs around the world. For example in Europe most of the losses occur in the last stages at the consumer while in Africa most of the losses occur in the first stages at harvest and production (FAO, 2012; Parfitt *et al.*, 2010).

As noted before, besides a shift in diet, reducing waste is crucial in reducing the environmental impact of our food system (Foley *et al.*, 2011). In 2012, the European Commission set a target to cut food waste in Europe in half by 2020; and if the global food waste would be cut in half by 2050, it could close about 20% of the gap between calories available today and those needed by 2050 (Searchinger *et al.*, 2013). However, this is a big challenge because even if in developing countries make progress, it is probable that food waste at the consumer stage elsewhere will grow due to the growing middle class (Searchinger *et al.*, 2013). Again, proving the importance of a focus on sustainable food in countries with a growing middle class, like Vietnam.

Food waste at the stage of consumption is caused by abundance, poor planning, poor storage, poor preparation, high standards for appearance, the attitude that "disposing is cheaper than using or reusing" and confusion over "best before" and "use by" dates (FAO, 2012; Parfitt *et al.*, 2010). Food waste at the consumption stage is also fuelled by how food it is offered: a wide range and supply of product brands and in large quantities; or, in developing countries, by an inadequate market systems and failure to comply with minimum food safety standards (FAO, 2012).

Raising public awareness and education on the impact of food waste could help in changing people's attitudes and eventually establish behaviour change (FAO, 2012). In developed countries examples of food waste programs are found, such as: *Love Food, Hate Waste* in several countries, or *Stop wasting food* in Denmark or *Waste not want not* in the UK (FAO, 2012; Searchinger *et al*, 2013). The FAO (2012) further states that in these programs, the private

sector could play an important role because they of their influence on shopping, preparation, consumption and waste. This is again an argument for this research to focus on an alliance and creating a dialogue between consumers and industry in Vietnam.

The role of packaging

Packaging can play an important role in reducing food waste. A good understanding of the protective functions as well as the marketing functions can help sustainable food consumption. The FAO (2011) promotes the value of packaging for small-scale farmers. They say that "improvements in packaging do not only lead to better food quality and safety but can also help enhance the livelihoods of small producers by attracting better market share and value through increased visibility" (FAO, 2011).

In developing countries there is generally a limited demand for packaging materials. The packaging industry is often underdeveloped and cannot meet international standards. This often results in low investment in the packaging industry as well as for local agro-food producers to enhance their product packaging and meet consumers' needs (FAO 2011). The FAO continues with a recommendation to relax packaging regulations, for example for recycled materials when they carry no threat of contamination. Relaxation could thereby stimulate the development of a more environmental friendly packaging industry in developing countries.

2.4.9   FRAMEWORK FOR SUSTAINABLE FOOD CONSUMPTION

From the cited literature in the previous paragraphs, five main themes are identified that form the basis of the sustainable food consumption framework that was developed. There is no hierarchy in these five themes but it is believed they reflect the most basic concerns and possible direction of action.

- Reduce food waste
- Reduce packaging waste
- Give preference to certain food types (organic, fair trade, local, seasonal, non-processed)
- Give preference to less meat and dairy
- Reduce energy and water use

On page 46-47 the framework for sustainable food consumption can be found. The

SUSTAINABLE
FOOD CONSUMPTION

A REDUCE FOOD WASTE	A.1 Buy the right amount of food A.2 Store food well, keep it fresh A.3 Prepare only the food that you need
B REDUCE PACKAGING WASTE	B.1 Buy less packaging B.2 Buy packaging of certain materials B.3 Re-use packaging B.4 Recycle packaging
C PRIORITIZE LESS MEAT & DAIRY	C.1 Buy / eat / cook less meat C.2 Buy / eat / cook less dairy C.3 Buy / eat / cook more vegetarian
D PRIORITIZE TYPES OF FOOD	D.1 Choose more organic food D.2 Choose more local food D.3 Choose more seasonal food D.4 Choose more non-processed food
E REDUCE ENERGY & WATER USE	E.1 Buy / eat / cook less frozen food E.2 Reduce water use for cleaning & cooking E.3 Reduce energy use for storing & cooking

Figure 12. Sustainable food consumption. Actions for consumers and companies according to five themes

WHAT ACTIVITIES
A CONSUMER
CAN DO

HOW A COMPANY
CAN ACTIVATE
A CUSTOMER

WHAT ACTIVITIES A CONSUMER CAN DO	HOW A COMPANY CAN ACTIVATE A CUSTOMER
Make a shopping list Read portion size on the packaging	Provide options to make a shopping list Show the portions per person on the packaging
Do not refrigerate if not necessary Store food with the expiration date clearly visible Re-close packaging after opening	Give good and clear storing instructions Make the expiration date clear and visible Ensure that the packaging can be re-closed
Measure portions per person Follow cooking instructions Buy containers to store left-overs if necessary	Provide good cooking instructions Show portions per person in cooked and uncooked version Show how to use all of the product & not create left overs Show how to use left overs
Prioritize bigger or family packs, Do not use single packed products	Provide bigger or family packs Make packaging per unit smaller / more efficient
Prioritize packaging with no plastic Prioritize (bio)degradable packaging material	Use degradable packaging material Use natural packaging material Use less different types of packaging material
Give packaging a second function	Give fun instructions on second functions of packaging
Prioritize packaging material of one type of material Prioritize packaging material of paper, glass, metal Separate trash and bring it to a re-cycle point	Set-up a take back system Use less types or only one type of packaging material
Use less dairy per portion / recipe Replace meat in a recipe with vegetables Look up nutrition value of vegetable versus meat	Provide recipes with less meat per portion Show the nutritional value of vegetables versus meat Demystify the healthiness of meat over vegetable
Use less dairy per portion / recipe Replace dairy in a recipe with a substitute	Provide dairy free recipes Provide less dairy per portion
Look for vegetarian recipes Set one or more fixed vegetarian days a week	Provide a vegetarian option or recipe
Read labels to make sure a product is organic Look for trustworthy and real certificates Look up the meaning of labels & certificates	Make it clear on the packaging if a product is organic Do not use untrustworthy and fake certificates Explain what the used labels and certificates mean
Look for information of origin on the packaging Awaken your national pride	Provide information of origin, prefarbly not only textual Use national pride to promote local products
Look up seasonal information Hang a seasonal food calendar in your kitchen	Provide seasonal information about your product Make a seasonal version of your product (provides exclusivity)
Buy mostly raw / fresh ingredients Learn how to prepare food, follow a cooking class	Promote the use of fresh food and ingredients Offer detailed cooking instructions or classes
Do not freeze food when not needed Defrost frozen food before cooking	Give clear storing instructions Give tips on how to defrost before cooking
Do not keep the tap running when you clean food Re-use the cleaning water to water the plants Use the right amount of water during cooking	Give cleaning instructions to prevent water spillage Give cleaning indstructions for food safety Give tips to re-use water
Follow cooking instructions & cooking times carefully Use a lid on pans when you cook	Provide times with the cooking instructions Show pictures of a pan always with lid

framework gives a summary as well as an overview of what is believed to be able to make food consumption more sustainable. For each of the five themes, three to four key behaviours are identified. For each of these behaviours, there are various actions for consumers specified as well as for companies to stimulate the performance of these actions.

One of the five themes of sustainable food consumption is for example reducing food waste. One of the key behaviours on this theme is "buying the right amount of food". The next level of this theme then specifies actions on how to execute this behaviour. For example by making a shopping list, planning meals or checking the expiry date of a product when you buy it.

In the first studies of this research, sustainable consumption in general was approached from the consumer side in Vietnam. In the later studies, the focus was on innovation by creating a dialogue between consumer and industry, triggered by the topic of sustainable food consumption specifically. The choice for this direction was based on the findings from the first studies as well as based on the previously cited literature where a dialogue and alliance between industry and consumer was put forward as possibly beneficial for sustainable food consumption.

Therefore, the framework of sustainable food consumption does not only include actions for the consumer, but also for companies. The guidelines for companies show how they could stimulate their customers to engage in the actions. To stick with the example of food waste, planning and making a shopping list. Companies can for example stimulate their customers by providing online options to make shopping lists or clearly specifying portion size on their packaging.

To conclude, the framework gives an overview of the most important directions for action; it provides practical actions for consumers; as well as practical guidelines for companies to stimulate their customers. The latter is aimed at stimulating a dialogue between consumers and industry on sustainable food consumption by providing practical topics to engage in.

2.5   CO-CREATION AND INNOVATION

2.5.1   INTRODUCTION

One of the proposed solutions, based on the findings of the first studies, is to trigger a dialogue between consumer and industry around the topic of sustainable food consumption to ultimately stimulate innovation for more sustainable food consumption in Vietnam. Chapter 5 of Part II reports on a study of co-creation between agro-food SMEs and urban middle class consumers in Vietnam.

A short introduction to innovation and co-creation is given here, to be able to frame the theoretical background of the developed toolkit for co-design. More background and literature on co-creation can be found in Part II, Chapters 4 and 5.

2.5.2   CO-CREATION

In this research a specific way of structuring interaction for innovation is studied: co-creation. It is not said that co-creation is the only way to structure the interaction. However, specifically for new product and service development it is widely used. There is a good amount of literature on the applications and benefits of co-creation (see Part II, Chapter 5, *"5.2.2 The value and nature of a co-creation activity"* on page 246).

Despite the literature on the benefits, there is a lack of conceptual clarity (Roser *et al.*, 2009). Along the same lines, it is often said that often on co-creation it fails to raise critical issues and come to a clear definition. Therefore, chapter 4 in Part II aims at contributing to conceptual clarity and also treats the origin of co-creation more in-depth. The study gives an overview of co-creation models that have been developed over the past years (both by the scientific community and industry) and ends with 4 meta-models of co-creation.
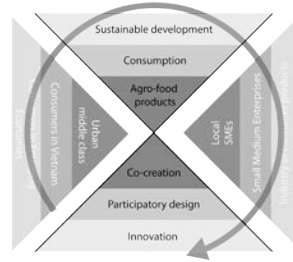
2.5.3   INNOVATION

Innovation is often an answer for big and small problems because it is known to be able to contribute to social and technical change (Keskin, 2015). Sometimes it seems like it is the answer to everything. Not enough economic growth: innovation. Elevating countries out of poverty: innovation. Incurable diseases: innovation. Everyday in the news there is an article about the need of (more) innovation to solve certain problems. In simple words innovation can be understood as the application of something new, commercially or industrially. The definition of innovation, in many dictionaries, is based on Schumpeter's definition (1934, p.73):

> "*The commercial or industrial application of something new - a new product, process or method of production; a new market or source of supply; a new form of commercial, business or financial organization*".

Often the 'something new' is a connection of different existing things. To create something completely new, something that is not a combination of existing things is nearly impossible. Therefore innovation feeds of interaction because it is able to bring different elements to the table, it allows for a larger pool of existing things to combine from. Next to that, inspiration sometimes comes from unexpected angles or situations. Many people have heard of the story of how penicillin was accidentally discovered or how Archimedes ran the streets naked because he had just discovered his law while taking a bath. Although the last one is a beautiful story, innovation is often purposely worked on for years and years, trying to combine differed things into 'something new'. Looking at the problem from a different angle or involving other people with different views during this process can stimulate innovation. Hence, co-creation can be useful for innovation.

Small, local companies and innovation

From an economic perspective it is often seen that innovation comes from the level of small and medium enterprises, and especially the small. That is where new ideas and new products or services are most often developed. It is the small size that allows these companies to easily interact with their customers and to respond to customer needs with short cycles of innovation. Unlike large firms, they are not hindered by organizational inertia and able to employ flexible decision-making processes (Dean *et al.*,1998; Keskin, 2015).

In Vietnam it is seen that the economic position of the local agro-food SMEs in Vietnam is threatened by globalization and increasing internationalization of the industry. On the other hand, Vietnamese consumers are increasingly interested in sustainable, green or natural food products (Part II, Chapter 1, *"1.5.4 Current (sustainable) consumption behaviour"* on page 122 and Chapter 2, "*2.5.4 Energy, food and the new generation*" on page 164). These results show that sustainability possibly serves as a good topic for the local agro-food SMEs to interact with their customers. If this interaction is structured by co-creation, the process and the outcomes can be beneficial for the innovation capacity of the local Vietnamese agro-food SMEs.

2.6   DEVELOPING A CO-DESIGN TOOLKIT

2.6.1   INTRODUCTION TO THE CO-DESIGN TOOLKIT

Co-creation has been executed in the form of a co-design workshop (Part II, Chapter 5). For a reflection on the difference between co-creation and co-design see Part II, Chapter 4, *"4.2 Literature"* on page 215). For the studies, a co-design tool kit was developed with the use of the study of Van Rijn *et al.*, on contextmapping in South-East Asia (2006), the Path of Expression (Sanders & Stappers, 2012, p.75) and Practice Theory (Shove, 2008).

The work of Van Rijn *et al.* (2006) is one of the few works that studied these types of activities in South-Eat Asia specifically, making it very useful for the development of the co-design tool kit. The Path of Expression was used because it is able to guide participants to a deeper level of expression. It is supposed in Asia people are less familiar with how to put their (richer) understanding into words (Nisbett, 2003) which makes good guidance of expression crucial to reach a deeper level of expression in the workshops. Practice Theory was used to develop the tool kit because it provides tools to elicit all elements of certain behaviour. In the co-design workshops in the studies, sustainable food behaviour was part of the problem definition. Also, practice theory has previously been valuable in analysing and understanding sustainable consumption behaviour specifically (Shove, 2003).

2.6.2   CO-CREATION AND CREATIVITY IN SOUTH-EAST ASIA

The success of a co-design workshop is highly dependent on participants feeling comfortable expressing their emotions and creativity. When participants do not feel comfortable they will not feel free to express the full potential of their creativity, motivations and desires. Therefore, next to the practical steps and preparation of the content, it is crucial to set the stage right at the start and create the right atmosphere for co-design. In order to create an atmosphere of comfort where everyone feels free to express themselves certain conditions need to be met. These conditions are different in different cultures. In the case of this research, it also brings along challenges of cultural difference between the researcher (European) and the participants (Vietnamese).

The well-read book *The Geography of Thought* (Nisbett, 2003) and the book with the very provocative title *Why Asians are less creative than Westerners* (Kwang, 2001) give some insight. Rather than the title of the last book suggests, a balanced picture of both cultures is painted. Kwang says, "To me, it seems rather clear that neither the East nor the West can claim the moral high ground in dealing with each other" (Kwang, 2001, p. 206). He does acknowledge that creativity in Asian culture or society is not nurtured or (traditionally) stimulated. In his last chapter he proposes some guidelines on how to nurture creative individuals and a more creative society of Asians. Nisbett (2003) shows a slightly different outlook on creativity of Asians. He does not propose guidelines on how to make Asians more creative, or in other words nurture creative Asians, like Kwang. No, Nisbett argues that Asians have a deeper and fuller understanding of situations and relations between people but are less skilled in putting this into words. Following Nisbett's view, co-creation in Asia could possibly work even better than in the West, as long as people are not asked to put too much of their creativity into words.

The existing literature on co-creation and facilitation of creative generative sessions is mainly based on European examples and studies (Sleeswijk Visser *et al.* 2005). Specific literature on differences in co-creation between Western and Asian cultures is sparse. But, Van Rijn *et al.* (2006) explored contextmapping in East-Asian cultures and give some very practical guidelines. They found three main factors of importance in these settings in East Asia: trust, nunchi and control.

4 FACTORS	7 GUIDELINES OF VAN RIJN *ET AL.*, (2006)	INCORPORATION IN THE CO-DESIGN TOOLKIT
Trust	Be trustworthy	Trust was gained by telling personal stories, by taking time for everyone to get to know each other before the start and doing a warm up exercise with everyone, company employees, facilitator and participants
	Recruit small groups to encourage differences	Participants were often divided into even smaller groups and motivated to express uniqueness
Nunchi	Speak their language	The co-design workshops were conducted and facilitated in Vietnamese, a translator was always present when the facilitator was not Vietnamese
	Recruit in equal hierarchy	Groups were mostly recruited from the GetGreen project where equal groups were already formed: students, housewives or community groups
Control	Provide a clear script	The invitation letter also provided participants with a detailed script which was repeated at the beginning of the workshop
	Be well prepared	Two weeks before the workshop people were officially invited with a letter containing all the details, a timeline and what they had to prepare
Cuteness	Make it fun	Cute figurines, colourful pink post-its with smiley's and emoticons were used, as well as fun games in between to energize the participants

Trust is important because in East Asian cultures social relationships are highly valued and people want to maintain harmony. Van Rijn *et al.* also expect large group sizes to slow down expression of individual opinions due to striving for conformity. Nunchi is a Korean word and literally means *eye measure*. It is the skill to sense someone's *Kibun*: mood, state of mind and current feelings. Control is important because in East Asia people tend to be uncomfortable with ambiguous assignments that can lead to misinterpretation and increased feelings of uncertainty.

Next to that, there is a factor of *Making it fun* that is also crucial for contextmapping (Sleeswijk Visser *et al.*, 2005). In order to make it fun, it is important to make tools that are aesthetically pleasing in the culture of the context. In Asia, cute aesthetics are experienced as enjoyable (Belson & Bremner 2003), hence the popularity in Asia of cute figures such as Hello Kitty. Therefore cuteness and fun are added as an extra factor in the co-design toolkit for Vietnam.

Based on these factors, Van Rijn *et al.* (2006) come up with seven guidelines that have been incorporated in the co-design (facilitation) toolkit for Vietnam. Table 1 describes how these have been incorporated.

2.6.3   THE USE OF THE PATH OF EXPRESSION

In a co-design workshop, a combination of different tools or techniques is used. Therefore, some also refer to the combination of the different tools as a toolkit. Generally there are three types of tools/techniques that can be used: Say-, Do- and Make-techniques (Sanders &
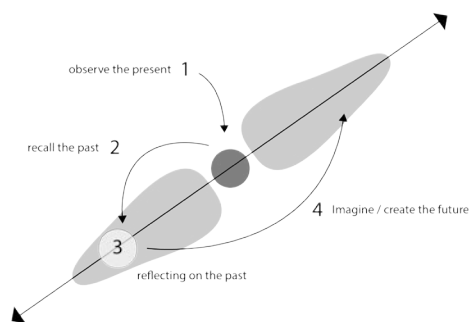

Figure 14. The path of expression (Sanders and Stappers, 2012, p. 75)

Stappers, 2012). The path of expression explains the combination of Say, Do and Make-tools. Along the path of expression participants are observed in the present, triggered to recall the past and after reflecting on the past, brought to the future and stimulated to create (artefacts for) a new experience (Fig. 14). In the final proposed toolkit it is ensured that participants are guided through all steps of the path of expression. The final step in the workshop is the end of the path of expression.

Do-techniques are included by observing people in what they are doing. Say-techniques are included by asking people questions about their experiences through. A Make-technique is closest to design and provides most opportunities to explore experiences at a deep level (Sanders & Stappers, 2012, p.66). The proposed toolkit for co-design workshops includes a combination of all three tools with an emphasis on Make-tools/techniques.

To create a toolkit with an emphasis on make-activities, certain things need to be considered: (1) time and budget, (2) location of use, (3) topic of the study, (4) comfort level and (5) what the intention is of the workshop (Sanders & Stappers, 2012). This resulted in more preparation steps and a specific step of 'opening the co-design workshop' to ensure a certain level of comfort and consistency of these elements.

2.6.4   THE USE OF PRACTICE THEORY

The co-design workshops were initiated around the mutual interest in sustainable consumption behaviour. Practice theory explains how a behaviour pattern is constructed of different elements. A practice is:

> "*A routinised type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge." (Reckwitz, 2002)*

In other words, a practice consists of motivations, know-how and things or as Shove *et al.*, (2008) describe it: images, skills and stuff. In short, images are socially shared ideas that give meaning to a practice; skills are learned routines that belong to a practice and can be handed over to other people; stuff refers to the tangible elements in a practice, both things and humans (Kuijer, 2014).

Practice Theory already proved to be useful in understanding sustainable behaviour patterns (Shove, 2003; Shove & Walker, 2010). Therefore, the three elements of a practice were used to guide the first explorative half of the co-design workshops. The work of Kuijer (2014) describes specific questions that can be used to uncover images and skills of a certain practice. She finds that images can be uncovered by asking questions such as: Why would practice this? You practice this because you want…? People that practice this are…? or People that do not practice this are…?. She describe questions to uncover skills such as: What do you need to know to this practice?; What do you need to do to this practice? Who can help you to practice this? These questions of Kuijer are incorporated in the workshop toolkit to stimulate discussion and help people come to a deep level of expression.

The second part of the workshop builds on the images and skills that are elicited, by making stuff associated with the practice. This second part is what is described as make-activities in the Path of Expression. For a make activity a clear design challenge must be formulated. A format is developed to be able to formulate a clear design challenge based on the images and skills for the sustainable behaviour. The format is as follows: design (stuff) that can help you to (skill) because you want to be (image) by doing this (practice). This design challenges is the start of the second part of the workshop. This is also the end of the path of expression. An example of a formulated design challenge for the make-activity according to this format is:

Design a packaging (stuff) that can help you to learn about nutrition facts (skill) because you want to be healthy (image) by eating more organic food (practice).

2.6.5   THE FINAL CO-DESIGN TOOLKIT

The different theories combined, as well as two pilot workshops have resulted in a final toolkit for co-design. The pilot workshops are described in chapter 5 of Part II. Basically the toolkit is divided into three parts:

- Preparation (steps A, B, C and D)
- Workshop Part 1 (steps 1,2,3,4,5)
- Workshop Part 2 (steps 6,7,8,9,10)

The toolkit consists of 4 preparation and 10 workshop steps. Table 2 shows detail to each

Table 2. The co-design toolkit that was developed. An overview of the different steps and theories behind them.

	Steps	Path of Expression	Say / Do / Make	Practice Theory	Participant activity
A CO-CREATION WORKSHOP TOOLKIT *For sustainable food products and services in Vietnam*					
Preparation	A. Selecting a facilitator				
	B. Selecting, inviting and sensitizing customers	Present	Do		The preceding week: pay attention to a specific sustainable behaviour with regards to a companies' product or service
	C. Preparing the materials				
	D. Preparing a location				
Workshop Part 1	1. Opening the workshop		Make		Drawing a funny / cute figure per body part in a small group
	2. Feedback in the form of 'Likes' and 'Dislikes'	Present / Past	Say	Things / Stuff	With cute Like and Dislike symbols giving feedback on the current product / service of the company
	3. Eliciting motivations	Present	Say	Images / Motivations	Why use a certain product / service or perform a behaviour?
	4. Eliciting skills according to previous experience	Past	Say	Skills / Know-how	How to use a certain product / service or perform a behaviour?
	5. Formulating design challenge	Past > future			Format for the design challenge: Design (stuff) that can help to (skill) to be (image) by practicing behaviour X?
Workshop Part 2	6. Having a break				
	7. Brainstorming ideas	Future	Say / Make		Pictures, post-its, colourful pens and a large A2 paper to brainstorm ideas on
	8. Designing concepts	Future	Make		One A3 size poster of cardboard for people to make their final concept on
	9. Presenting concepts				
	10. Closing the session				

step of the proposed toolkit for the co-design workshops. The table shows how each step is connected to the theories that were discussed. Some steps are not specifically connected to one of the discussed theory but origin more from general co-design methods. These steps origin from the importance of preparation and from practical reasons.

The three basic parts of Table 2 are preceded by a extensive company problem definition meeting and followed by a company evaluation meeting. A good problem definition meeting is crucial for the success of a co-design workshop and the evaluation meeting is crucial for the continuation of the results. Defining the problem is like defining the specifications for a design, this is pivotal for any design process (Roozenburg & Eekels, 1995). By embarking on a problem definition process, companies are also expected to be more prepared and to be in the right mind-set for a co-design workshop. Part II, Chapter 3 entails a study that specifically treats the problem definition meeting and process.

An evaluation meeting is expected to make results more tangible and clear, as well as directing future steps. However, these two meetings are not part of the actual workshop but more of the larger co-creation and innovation process. Chapter 5 of part II studies the execution of actual co-design workshops and the evaluation of the results and outcomes.

A detailed manual for companies to repeat this co-creation method was published as a separate guide (De Koning, 2017). This guide also includes detailed guidelines for the problem definition process and the evaluation meeting.

U.M.C. (Upper Middle Class)

I wanna be a lawyer

Doctor or professor

A member of the UMC

I want an air conditioner

Cottage on the river

And all the money I can see

I wanna drive a Lincoln

Spend my evenings drinking

The very best burgundy

...

And if there's war or famine

Promise I'll examine

The details if they're on TV

I'll pretend to be liberal

But I'll still support the GOP,

As part of the UMC

- Bob Seger, 1973

3. Main findings of PART II

INTRODUCTION

A summary of the main findings of each chapter of Part II is presented here. Table 3 shows the topics that are focused on in each chapter as well as the nature of the study: explorative, experiment or literature study.

Table 3. Overview of the topics per chapter and the nature of the studies in the chapters of Part II.

	Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5
Sustainability	●	●			
Consumption	●	●			
Behaviour change		●			
Food			●		●
Industry			●		●
Co-creation				●	●
Explorative study	●		●		●
Experiment study		●			●
Literature study				●	

Chapter 1 - Sustainable consumption in Vietnam

De Koning, J. I. J. C., Crul, M. R. M., Wever, R., & Brezet, J. C. (2015). Sustainable consumption in Vietnam: an explorative study among the urban middle class. *International Journal of Consumer Studies*, 39(6), 608–618.

In Chapter 1 sustainable consumption among the urban middle class of Vietnam was explored. It showed that the term and concept of sustainability, or Bền vững in Vietnamese, is still rather unknown. However, an intention of buying products that are better for the environment and using products in a more environmental friendly way was found. For example, organic products are gaining popularity, mostly because they are considered healthy, not necessarily because they are considered sustainable.

Food and health showed to be powerful motivators in Vietnam for people to get involved in more sustainable consumption and buying sustainable products and services (chapter 2). But, people did not always engage in sustainable consumption (yet), they said, because they did not know where to find (trustworthy) sustainable products. Saving money or saving resources were also great motivators for sustainable consumption. Saving habits are often still rooted in behaviour patterns from times of adversity before. But as Voltaire said: when it is a question of money, everybody is of the same religion.

Chapter 2 - GetGreen Vietnam

De Koning, J. I. J. C., Ta, T. H., Crul, M. R. M., Wever, R., & Brezet, J. C. (2016a). GetGreen Vietnam: Towards more sustainable behaviour among the urban middle class. *Journal of Cleaner Production*, 134, 178–190.

In Chapter 2 sustainable behaviour according to 90 sustainable actions of the GetGreen Vietnam programme was studied. A change was reported: people said they changed from being on average involved in 64% of the sustainable actions to being involved in 80% after the program. Some 20% of the actions were reportedly still not done, most of these were buying actions. People said they did not know where to buy sustainable products or how to find trustworthy companies (as was also found in Chapter 2), especially for food products and energy saving products.

The social aspect of the GGVN program showed to create a sense of community and a great component in motivating people for sustainable consumption. It strengthened the feeling of doing the good thing, despite the ridicule of friends and family.

Chapter 3 - Mental innovation space of Vietnamese agro-food firms

De Koning, J. I. J. C., Crul, M. R. M., Van Engelen, J. M. L., Wever, R., & Brezet, J. C. (2016b). Mental innovation space of Vietnamese agro-food firms. *British Food Journal*, 118(6), 1516–1532.

The study in chapter 3 introduces the 'Mental Innovation space' model. This model was developed to describe the participatory innovation skills of a company. The chapter focused on the agro-food industry because people said they were willing to buy more sustainable products but that a lack of action was caused by distrust and (perceived) low availability. The study was organised around the steps of the problem definition process of the co-design toolkit.

The study showed that agro-food SMEs struggled and were struggling to bind customers but had partially managed by building personal relationships of trust (see also the results of Chapter 5). Structured innovation processes were not common practice. The SMEs in the study had little experience with innovation and practiced short-term planning of incremental improvements close to the market. According to the SMEs, an insufficient marketing budget was the biggest obstacle in expanding their customer base. They showed an interest in collaborative processes and an eagerness to try out new ways of connecting to their customer.

Chapter 4 - Models of Co-Creation

De Koning, J. I. J. C., Crul, M. R. M., & Wever, R. (2016c). Models of co-creation. In *ServDes.2016* (pp. 266–278). Copenhagen, Denmark: Linkopping electronic press.

Chapter 4 studied over 50 models of co-creation from scientific and popular sources. From the analysis of the models four meta-models were abstracted. These four meta-modes show the different views and perceptions of co-creation as well as the different aspects.

The models show that co-design is a form of co-creation design that requires high levels of collaboration that can stimulate innovation and new product development. However,

the models also show that co-design does not result in direct or tangible product or service solution for the participating end-users is.

Chapter 5 - The value of co-design, beyond new product ideas

This chapter was not previously published.

The study of chapter 5 reports on 16 co-design workshops with 16 Vietnamese agro-food SMEs and consumers of the urban middle class. The aim of this collaborative creative act was to stimulate the development, acceptance and spread of sustainable food products in Vietnam; as well as to enhance the relationship and mutual understanding between the eager SMEs and willing customers. The topic of sustainable consumption, as a rising concern on both sides, was used as a trigger for dialogue in the work-shops.

The outcomes of the co-design workshops showed that co-design is useful, but powerful in some ways more than others (Part II, Chapter 5). It proved to be useful for several new product idea. And, it was noticeable that co-design strengthened the sustainability orientation for some companies and that it was stimulated by the workshop.

However, it proved to be most valuable in creating a sense of community, education of both employees and customers and in building transparency and trust between the two. These findings suggest that there is a possibly leading role for companies. These companies are involved in the actual production of food and can therefore show what they do rather than a government could for example. This could make them role models for society. Co-design could offer a platform to do this. It could help build mutual understanding and possibly stimulate an outbreak of sustainable food consumption.

4. Conclusion and answer to the research question

4.1 THE SHORT ANSWER

GRQ: The Vietnamese middle class consumers, and their consumption patterns, are transitioning. How can co-design support the Vietnamese production and consumption system and keep the prosperity striving as well as provide more environmental sustainability?

Yes, there is a possibility to influence the transition the Vietnamese consumers are going through, though not easily. The topics of food products and energy use can interest people for sustainable consumption; the corresponding health and money gains are able to motivate people. If these topics are used to engage people, later, the activity might spread to other consumption categories. Co-design could help in the process of increasing sustainable food activities in Vietnam, rather through creating a sense of community than stimulating revolutionary new sustainable products.

RQ1: In what way is the urban middle class of Vietnam currently contributing to environmental sustainability in their buying, using and disposal of different product categories?

Water: high awareness due to scarcity in the past. Much action because of routinised habits.

Energy: Some awareness. Some action motivated by saving money.

Transport: Some awareness due to air pollution. Little action because people point to others to solve the problems (government and industry).

Waste: Awareness due to visible pollution (landfill, street waste and plastic waste in water but selected intention (only to reduce plastic bags) and little to no action.

Food: High awareness due to food safety scares. High motivation for health. High intentions but little action due to perceived lack of availability and trustworthy sources of food.

General motivators: Health, saving money and safety of family and future generations

General barriers: Perceived lack of knowledge, lack of availability and lack of money as well as distrust in industry and government

RQ2: How can the middle class of Vietnam be stimulated towards buying, using and disposing products and services more sustainably?

By creating bottom-up initiatives detached from government structures, building on the strong neighbourhood sense of community.

By social encouragement and social acceptance due to group based activities, possibly through examples by role models.

By establishing (personal) relationships of trust between producers and consumers.

By providing practical guidelines that are adapted to the context.

By creating a better audited labelling scheme, especially for food products and electronics.

RQ3: What is the current human centred innovation capacity and capability of the local agro-food companies in Vietnam?

Short-term focus of innovation, resulting in improvements and re-design.

A focus on growth for existing products by marketing activities to enlarging the customer base.

A copy cat culture, resulting in product ideas copied from other companies, mostly foreign companies, and a closed innovation process because of the fear to be copied.

There is little customer involvement in the innovation process, but strong and close customer relationships.

RQ4: In what way does co-creation add to the human centred innovation capacity and capability of the agro-food companies in Vietnam?

Indirect, by providing a structured form of interaction that is active and positive which allows for constructive feedback resulting in better customer understanding.

Indirect, through the transfer of participatory skills onto company employees.

Possibly direct, by resulting in the creation of better adapted sustainable products.

Direct, by focusing on sustainability mutual value is created which also directly results in customer education and a sense of community.

4.2 THE LONG ANSWER

4.2.1 INTRODUCTION

This long answer will include each of the four individual research questions that were posed in the beginning of this thesis; as well as the answer to the general research question. The same order is followed for the conclusions, as was done for the research. First, a closer look at the consumer is taken (RQ 1 and RQ 2). Second, the role of the companies is exposed (RQ 3). Third, through co-design the value of the combined role of companies and consumers is explained (RQ 4 and GRQ).

4.2.2 VIETNAMESE CONSUMERS AND SUSTAINABLE (FOOD) CONSUMPTION

RQ1: In what way is the urban middle class of Vietnam currently contributing to environmental sustainability in their buying, using and disposal of different product categories?

RQ2: How can the middle class of Vietnam be stimulated towards buying, using and disposing products and services more sustainably?

(Part II - Chapters 1, 2 and 5)

Sustainable consumption in general

In the first two studies five consumption categories were studied: transport, energy, food, water and waste. Food and energy showed to be the most popular topics in the results of chapter 2 about the GGVN program. The focus groups and interviews about sustainable consumption in chapter 1 also showed that people were most interested and motivated for sustainable food consumption. For the subsequent studies food was selected as a promising category to engage people in more sustainable consumption in Vietnam.

In Vietnam social norm as well as perceived behavioural control showed to be important factors in sustainable consumption behaviour. People said they did not know how to consume more sustainable and that a lack of availability was holding them back. These are signs of a low perceived behavioural control. In the behaviour change program GGVN the power of social norm was shown. People often said they were not involved in sustainable consumption before

GGVN because it did not fit their social context despite their motivation. After the program family and friends would still make fun of these people but now they would not withhold their actions, they felt they now had a social network of like-minded people around them.

Sustainable food consumption

In general, the perceived benefits of sustainable food consumption in Vietnam are health and safety. This is because of the perceived threat or fear of diseases due to unsafe, chemical or unnatural food, this is similar to other countries in Asia. People said they would pay more and consume more sustainable if products were better available. It was not studied if people actually changed if the availability would increase. And this is, regarding the extensive literature on the intention-action gap for sustainable consumption (see Part II, Chapter 1, *"1.2.4 Intention-action gap for sustainable consumption"* on page 109), still questionable. However, those studies focused mostly on the developed world where the context and availability of food safety are different from Vietnam. Therefore it is believed an increase in availability could have a different effect in Vietnam and emerging Asia compares to the developed world. In order to validate the assumption, more research should be done on increasing availability and knowledge and the effect on sustainable food consumption in Vietnam and the rest of emerging Asia.

The five themes of sustainable food consumption

In the introduction of this thesis, 5 themes of sustainable food consumption were defined: reduce food waste, reduce packaging waste, prioritise less meat and dairy, prioritise certain types of food and reduce energy and water use. Four of the five themes of sustainable food consumption also corresponded well with Vietnamese habits and desires.

People tend to minimize food waste. Although the latter comes with a disclaimer: people minimize food waste at home, and not out doors. Reducing food waste at home is common, people tend to use all food and use leftovers for the next meal. Food waste is believed to be sinful which also stems from the Buddhist roots in society. Reducing packaging waste and especially the use of plastic bags has become the poster child of sustainable consumption in Vietnam. People are very motivated to use less plastic, although they still find it hard to do so because it has become such a constant factor in life's daily eating and shopping rituals. Reducing energy and water use also resonates well. Reducing energy use because it saves

money and reducing water use because that is a habit still in vogue from scarcity in the past. Prioritizing organic, local, seasonal and non-processed food, is what resonates best with the Vietnamese consumers. They are believed to be healthy and safe because of traditional and chemical free methods of production that can be seen at the local production site.

However, for reducing the high-impact meat and dairy consumption people showed little interest. It was already stated (Part I, *"2.4.4 Meat and dairy"* on page 40) that an increase in meat and dairy consumption is one of the two key factors contributing to the impact of emerging middle class consumers around the world. The other factor is the increased use of motorised transport. In this research an enthusiasm for consuming less meat and dairy was not found. In Vietnam, meat and dairy are believed to contribute nutritional value that other products cannot. They are believed to be crucial in a healthy diet. In the focus groups of Chapter 1 this already became clear (see "*1.4.6 Food*" on page 119).

To change this situation in Vietnam, an interesting direction lies in the Buddhist roots of society that still have an influence on a large part of the population. Prevalent Buddhist habits make that many people do not eat meat once a month; and sometimes a whole month if something special is wished for. These habits are not studied in-depth, and it is a small start, but they could serve as a routine to build on to include more vegetarian habits into the Vietnamese diet.

A critical side note on sustainable (food) consumption in Vietnam

Before concluding on a positive note, a disclaimer must be inserted. It was not found likely that many Vietnamese consumers will switch towards more sustainable consumption tomorrow. For certain categories of consumption (transport and energy) people did not show an intention to change. However, for the category of food this was different. People felt the urgency and were looking for alternatives. It is not said that sustainable *food* consumption will take off like a rocket, it rather serves as a good starting point. Hard work of all stakeholders is needed because consumption in Vietnam will only increase the coming years. If consumers take action, as well as industry and government, a slightly more positive (or less negative) future of sustainable consumption Vietnam can be imagined.

Also, from this thesis it must not be understood that the future food system of Vietnam (and

globally) should be completely organic and local without allowing for large scale and cross-border food production. Organic and local small scale agriculture has positive aspects for long-term biodiversity and agricultural knowledge, but also lower crop-yield. It is suggested that there should be more cross-over between organic and conventional farming as well as local and international farming. A cross-over should facilitate large scale food production as well as making better use of the agriculture land to be able feed the growing global population. In simple words: if less harmful and more diverse methods are used to upscale global food production, the agricultural land will be of better quality for more years to grow crops on.

TO CONCLUDE: food as a first focus towards more sustainable consumption in Vietnam

The results show that there is reason to believe the market for more sustainable food products in Vietnam can grow. In Vietnam, a focus on health results in a growing interest in organic, local, natural, safe and seasonal food. This serves as a good starting point for the middle class to demand a better food system and ultimately to engage in sustainable food consumption as a more holistic concept than just organic or local food.

If companies can provide products and services, for a small price premium and in a convenient way, that incorporate the aspects people aspire to in food, sustainable food consumption will be on the rise in Vietnam in the coming years. The government can stimulate this by establishing an easy accessible certification scheme, also for small-scale farmers, as well as regular auditing of these schemes to increase the trustworthiness of the certificates with consumers.

4.2.3   VIETNAMESE AGRO-FOOD SMES AND INNOVATION

RQ3: What is the current human centred innovation capacity and capability of the local agro-food companies in Vietnam?

Part II - Chapters 3 and 5

A focus on product perfection, without asking what the consumer wants

The Vietnamese agro-food SMEs showed a lack of formal (user-centred) design skills. The companies were mostly focused on the product and technical perfection. The user was rarely asked what they actually want or need. This does not origin from arrogance, in a sense that

the companies think they know better, but more from a belief that customers will come when their product is perfect. However, the idea that a customer can help making the perfect product (other than testing what the company has made) was novel to them. The companies believed marketing was the (only) tool to withstand competition, to attracting more customers and making them interested in their food products. This shows on the one hand that the need for a more customer orientated focus was acknowledged but on the other hand that the envisioned options were limited.

The research (Part II, Chapter 2 and 3) showed that there is a need to better adapt the food products to the users needs. Also, higher demands and increasing international competition makes that innovation is needed to obtaining or maintaining a competitive position in the globalization of the market. The Vietnamese agro-food SMEs acknowledged that innovation and human-centred innovation is a strong strategy to do so.

The copy cat-culture showed to be a barrier for innovation for the companies. It makes that it is not stimulated to create something new, but rather copy from the best. And, the fear of being copied makes that companies have a closed innovation process and little cross-over or spill-over of knowledge is seen in the industry. The fear of being copied also resulted in hesitance for co-design for some of the SMEs in the study. This copy-cat culture in Vietnam was studied more closely among other industries, there it was also found to be common practice (Jin, 2015). The copy-cat culture (and low innovation or formal design skills) became much apparent in the stories of how companies were founded. The originating idea of half of the 16 companies was copied from other (often foreign) companies.

One can wonder if it is actually needed that these agro-food SMEs are stimulated to innovate, design and survive. What if larger international companies, that are entering the Vietnamese market, would take over? They are skilled in innovation, participatory design, food safety or long term planning. Then small companies can simply copy these larger ones. However, this is not a favourable situation for many reasons, especially not in the agro-food industry. The literature in the beginning showed that for reasons of intellectual capital, the familiarity of people with means of production, a diverse and balanced diet and health reasons it is important that the small-scale farmers survive in Vietnam.

There was also a positive aspect to the human centred innovation capacities of the companies in the study. They showed to have built a small loyal customer group based on personal relationships and trust within the community. Often the local companies fulfilled a role of educator and personal trustee on food and food production. Several companies with a sustainability focus are used to invite people to their production facilities or farms and show how food is grown or processed. This way a relationship of trust is built as well as education of the community.

TO CONCLUDE: a lack of participatory design and innovation skills among Vietnamese agro-food SMEs

The local agro-food SMEs in the studies showed low (participatory) design or innovation skills, they often copied others, were afraid to be copied, had a short term planning and focused on increasing the customer base through marketing.

On the other hand, they were very open to collaborate with their customers and they had often built a loyal group around them through personal interaction. This showed an openness to collaborate more intense with customers. Anticipating on the next paragraph, participatory design is one of the skills the agro-food SMEs could benefit from, next to others such as supply chain management, marketing or digital advertising just to name a few. The openness of companies towards customers and their short and strong ties prompted co-design specifically as a possible strong tool for innovation.

4.2.4   CO-DESIGN AND INNOVATION FOR SUSTAINABLE (FOOD) CONSUMPTION

RQ4: In what way does co-creation add to the human centred innovation capacity and capability of the agro-food companies in Vietnam? (Part II - chapters 3, 4 and 5)

GRQ: To which extend is it possible to influence the transition Vietnamese consumers are going through with co-design so that prosperity will continue to increase but environmental sustainability also prevails? (Part II - chapters 1,2,3,4 and 5)

The last chapter in this thesis (Part II chapter 5) studied co-design as a form of participatory design to increase product innovation and customer understanding among Vietnamese agro-food SMEs. This provided an answer to the last as well as the general research question.

Low design skills resulted in little handlebars for continuation

The workshops proved to be somewhat valuable for product innovation. They provoked more future thinking and future planning but did not often provide companies with a clear product idea they could continue with. The capacity of companies to transform certain ideas into feasible ideas was also low and the expectations (from the researchers and companies) were maybe too high. However, customer understanding through the active form of customer interaction was perceived as most valuable by the companies. The workshops managed to create a constructive an mutual beneficial dialogue between consumer and producer.

Other forms or methods of participatory design were not studied and therefore it cannot be concluded that other participatory design methods would result in a similar relatively low value for product innovation. However, there is reason to believe that the general low design (thinking) skills of the Vietnamese SMEs would make other participatory design methods also less beneficial for new product development compared to societies with higher design thinking skills. Maybe it can be concluded that co-design was one step too far ahead to bring design innovation in Vietnam to a higher level. It could be that more general design thinking skills as well as qualitative market or user research skills should be made available to these companies first.

A powerful alliance

The results showed that co-design could be useful for stimulating more sustainable food consumption. The alliance between agro-food companies and urban middle class consumers was quite powerful because of the direct contact and direct influence on each other. The workshops also proved to be stimulating for companies that did not focus on sustainability much before. It was a way of building transparency and trust between the two parties and education of both employees and customers. The power of a social structure and group-based activities was shown again. Different bottom-up social structures should be explored in the future to mend alliances between consumer groups and other stakeholders, such as companies, education, government and NGOs. The companies however, have a unique position because they have the power to show what they do. This makes their knowledge visible, practical and tangible. Local companies are important in this alliance because personal stories of local

people are greatly valued. In the future, these companies could take a leading role in making the Vietnamese food system more sustainable, not only in providing products but also by being role models Vietnam needs.

A pitfall in this imagined future is that sustainability oriented companies will be scared of being copied. This could hinder growth of a sustainable food market in Vietnam. Also, negative publicity on sustainable companies in the media (in that they are not sustainable enough), can make people lose faith in the sustainable food industry all together. Of course one needs to stay critical but on the other hand this can inhibit companies from trying to take the step towards more sustainable production. Or, with the words of Voltaire: It is better to risk saving a guilty man than to condemn an innocent one.

To conclude: from co-thinking to co-design to stimulate more sustainable food consumption

With the current lack of innovation and participatory design skills it will be hard for the local agro-food companies to survive in the globalising market and contribute to the much needed focus on sustainable food consumption. The structure of co-design can aid the needed fortification of the alliance between local agro-food SMEs and consumers. However, expectations should be managed. Co-design in the studies came to expression in the form of co-thinking, rather than co-design. This can be attributed to the rather low formal design skills of the companies. However, co-thinking through co-design could help in strengthening the alliance between consumers and producers; provide input for companies on product, services and education; and help develop a focus on sustainable food production and consumption.

4.3 IMPLICATIONS FOR THEORY: CONTRIBUTIONS AND FURTHER RESEARCH

4.3.1 INTRODUCTION

Contributions to theory have been made throughout this thesis, as well as recommendations or indications for further research. For clarity and overview an overview per research topic is given. Again, this is discussed according to the same three themes, also both according to a short overview and a long answer.

4.3.2 SUSTAINABLE (FOOD) CONSUMPTION AND VIETNAM

This research contributed to the theory of sustainable consumption in several ways. First of all, sustainable consumption was described according to the MOA model of Ölander and Thøgerson (2005). This made it possible to identify advantages and disadvantages of the use of the model for this specific application. The model works well to describe sustainable consumption. Particularly because it singles out intention which is important to understand the often reported intention-action gap. The results of sustainable consumption studies in Vietnam indicated an intention to consume more sustainable but a lack of knowledge and availability prohibiting the behaviour (or moderating the intention). Further research should point out if an increase in availability and knowledge could indeed stimulate more sustainable consumption behaviour and decrease the intention-action gap.

Disadvantages of the use of the MOA model are that social norm falls under motivation and a factor of perceived behavioural control is not explicit. Under the factor abilities one could place perceived behavioural control. However, it is important to distinguish between behavioural control and perceived behavioural control. Therefore it is advised, when using the MOA model for sustainable consumption behaviour, to emphasize the factor social norm, which is under motivation. This factor should get primary attention and therefore it would be better to detach it from the factor motivation more clearly. In other behaviour models, such as the Theory of Planned Behaviour (TBP), the factor of perceived behavioural control does

IN SHORT: CONTRIBUTIONS AND FURTHER RESEARCH

THEORETICAL CONTRIBUTIONS

- Application of the MOA model in describing sustainable consumption and 5 categories of consumption (Part II, Chapter 1 and 2)

- Categorization of 7 types of design strategies for sustainable behaviour change (Part I, Background)

- Sustainable food consumption guidelines according to five themes for consumer and company (Part I, Background)

- Mental Innovation Space model to describe HCD skills for innovation in SMEs (3) and the Business Unit Model to describe four areas of design for food (Chapter 3 and 5)

- Four meta-models on co-creation (4) and a co-design toolkit (Part I, Background and Part II, Chapter 5) and a co-design manual (separate guide).

FURTHER RESEARCH QUESTIONS

- Can an increase in availability and knowledge indeed decrease the intention-action gap and stimulate more sustainable consumption in Vietnam?

- How can Buddhist vegetarian habits be rooted in consumption patters of future lifestyles in Vietnam?

- How can old habits be preserved in future sustainable consumption patterns?

- How can product and service ideas resulting from a co-design process become more beneficial for companies with low design thinking skills

- How can co-design skills be increased within a low design skills context of agro-food SMEs in Vietnam?

- How can the results of a co-design process be made brought to a more innovative and feasible level with similar efforts?

- How to make the preparation and the sensitizing period for co-design better adapted to the Asian context?

get an explicit role in the model and social norm is detached from motivation and beliefs. However, in the TBP model intention results directly in the behaviour which does not allow for an instant overview of the intention-action gap.

Second, a categorization was developed of the seven design strategies for sustainable consumption behaviour of Bhamra *et al.*, (2007). This model was defined in the background and not specifically used in the studies because it was published after the studies of this research were conducted. However, it allows for an understanding of the connection between participatory design and sustainable use of products. This is an important connection to make for designers and should be explored in future research. The categorization could help designers to be more conscious about the influence on sustainable behaviour.

Third, for food five sustainable consumption themes were defined in a framework. The framework proved useful in describing sustainable food consumption in Vietnam and identifying strategies for sustainable food consumption in the future. Research in different contexts should further test the ability of these five themes to include a full picture of sustainable food consumption. The least popular of these five themes, but of high impact, was adjusting a diet to less meat and dairy. This should be researched in the future as well as how to interest people for it. Also, minimizing food waste is one of the old rooted habits that contributes to less environmental impact of consumption. Specifically these old habits are interesting and it should be further investigated how these could be rooted in consumption patters of future lifestyles in Vietnam.

4.3.3   AGRO-FOOD SMES AND HUMAN CENTRED DESIGN

The human centred design capacity of agro-food SMEs in Vietnam has been studied. This has brought forward two main contributions to theory. First, the model of the Mental Innovation Space allowed for a clear description of the combination of innovation and participatory design skills. By reflecting on the work done and through feedback it has become apparent that one dimension was not always clear: the Focus of innovation. This dimension is a combination of two models: the Business Unit model (packaging, service, product or brand story and the stage gate model (ideation, conceptualization, testing and product launch). It is possible that

in the future these two should be considered as separate dimensions. In general, the model should be further tested for its abilities to describe the mental innovation space of companies.

Second, the Business Model Unit specifically proved to be useful in widening the focus of the agro-food companies. It make them realize their business was built on much more than just the actual food product. This was useful because the agro-food companies it Vietnam showed to be focused on product perfection. It is possible that agro-food companies in other countries have a similar product-focused orientation. The Business-Unit model could therefore be useful in expanding the scope of innovation for the agro-food industry in general.

4.3.4   CO-DESIGN AND CO-CREATION

The contributions to theory in the field of co-design and co-creation may be the most evident in this thesis. Chapter 4 of Part II is based on co-creation literature and presents four meta-models as an abstraction of the studied models. These meta-models already proved to be useful for other research to define their scope. Also, it responds to the often-expressed need in literature of clarification of the concept of co-creation. The four meta-models models clarify the different aspects of co-creation theory each in their own way. The first model gives a visual definition of co-creation. The second model depicts the two main views in literature: co-creation as an innovation approach and co-creation as a design method. The third model visualizes five types of co-creation according to three axes. The last model defines the respective steps of the two views.

In this thesis other people's theoretical contributions to co-creation were also incorporated into a practical co-design toolkit. Some questions for further research arose from operationalising existing theory and the use of the toolkit. The toolkit is divided into five parts: problem definition, preparation, workshop part 1, workshop part 2 and results and evaluation.

Problem definition showed to be crucial to the success of the co-design workshop. Tools to structure this process were given by the models of the Mental Innovation Space. This should be further tested and updated. Preparation was where the companies in the studies saw most improvement. This is probably because most methods of co-creation are based on western studies. More contextual research on the preparation phase for co-creation in other contexts

is recommended. This was also the case for the customers. It was not often that consumers engaged in the sensitizing periods. Paper based sensitizing material and no face-to-face engagement showed to be barriers. It should be further studied how to make the sensitizing period more attractive for participants in Asian contexts. The workshops part 1 and 2 showed to work well. However, in future research attention should be given minimizing ambiguity of open-ended questions while still enabling a discussion on societal value.

The last part of a co-design process is where maybe the biggest challenge lies for further research. The agro-food companies found the co-design process and active form of interaction useful but the products and service ideas often not feasible or innovative. The perceived low feasibility of the results was attributed to the low design thinking skills of the Vietnamese agro-food companies. Further research should focus on three aspects of the results of a co-design process in a context with low formal design skills. It should explore how the resulting product and service ideas from a co-design process could be turned more beneficial for companies with low design (thinking) skills. It should be explored how co-design skills could be increased within the context of low formal design skills of the agro-food SMEs in Vietnam. Last, it should be studied how the results of a co-design process can be brought to a more innovative and feasible level with similar efforts.

4.4   IMPLICATIONS FOR PRACTICE: RECOMMENDATIONS FOR STAKEHOLDERS

Much has been said about the Vietnamese consumer and the local companies and what they can do to achieve more sustainable consumption in Vietnam. For the consumer the 5 themes of sustainable food consumption were defined, but there is more they can do. For the Vietnamese agro-food companies co-design was suggested as a solution but there is also a role for other stakeholders.

Again, recommendations are given in short for each stakeholder (on the pages 84-85) as well as in an elaborate version.

4.4.1 THE VIETNAMESE CONSUMER

Corresponding to the vision of the GGVN project, the front-runner consumers should be advocates or change agents for the rest of the population. Due to the social structure of the country it would be most beneficial in direct social circles. The Vietnamese consumer is a crucial stakeholder in striving for more sustainable consumption in Vietnam. It was seen that food is a topic able to engage the consumer in sustainable consumption. Therefore the 5 themed guidelines for sustainable food consumption were developed. However, it is also important the Vietnamese consumer realizes the consumer power they have and will actively demand better products from companies. One of the ways is by seeking more interaction with the companies.

The group-based structure of GGVN showed positive effects. However, the use of some existing social structures did not work as well as other. There were groups called 'community groups' defined by a top-down structure of the government. Most of these groups consisted of older women or men. The younger participants preferred different social structures. They showed a relatively low trust in the government. (This was seldom explicitly mentioned but often clear from other statements or softly whispered during interviews.) This again strengthens the idea that bottom-up initiatives in Vietnam would work well in promoting sustainable consumption, involving the younger generations. Therefore it is recommended to not build future sustainable consumption programs on these existing community structures. Especially for the younger generation it is recommended to use different existing social structures, such as the educational system.

4.4.2 LABELS AND CERTIFICATES AND THE ROLE OF THE GOVERNMENT

Labels and certificates were an ever returning topic in the interviews, focus groups and co-design workshops. In the workshops often one of the first positive aspects mentioned was about a certificate on the packaging. If a certificate was missing, it was often one of the main recommendations.

On the other hand, which is contradictory, in Vietnam people tend to rarely trust labels and certificates. The abundant use (and abuse), the lack of regulation or control and the

IN SHORT: RECOMMENDATIONS FOR EACH STAKEHOLDER

THE VIETNAMESE CONSUMER

- Demand better products from companies and look for interaction and give feedback.
- Be a role model for your surroundings and tell friends and family about the benefits of sustainable consumption.
- Keep, cherish and transfer old habits to younger generations, such as saving water, energy or minimizing food waste.
- Follow the guidelines for the 5 themes in the sustainable food consumption framework.

GOVERNMENT

- Create a certification scheme that is regularly audited and controlled.
- Make certification easier to obtain for SMEs.
- Stimulate the topic of sustainability early on in education.
- Stimulate collaboration of educators and practice, for example by connecting schools and universities more to sustainable companies.

VIETNAMESE AGRO-FOOD SMES

- Involve customers (more) in the product development process and interact with customers in a more structured way. Use the co-design manual.
- Do not strive for technical perfection first, ask early on what customers want and seek frequent feedback.
- Educating your consumers by inviting them to the production facilities.

INTERNATIONAL COMPANIES

- Seek interaction with local SMEs to learn about their local agricultural traditions and offer design or innovation skills in return
- Make methods and practices for sustainable production widely available online and in different languages

LOCAL DESIGNERS

- Seek for more participatory ways of design: involve the user in an early stage of the design process
- Be connected to all levels of the organization and show your company what design can do beyond aesthetics and making
- Ask for constant feedback of the users and within the organization to validate and create support for your ideas

INTERNATIONAL DESIGNERS

- Showcase examples of sustainable products and the process of how the design came to its final form
- Seek for more inclusive ways of design when designing for the context of Vietnam and other emerging economies, that way people can learn from the process
- Set-up collaborative projects with designers in developing countries and focus on mutual exchange (not on sending or receiving only)

DESIGN EDUCATION INSTITUTES

- Ensure to include projects for developing countries early on in the eduction curriculum
- Set-up more connections and exchange programs between design faculties in developing countries
- Make the educational tools for design widely available and easily accessible through the internet

unauthorised use of labels makes them little trustworthy. The government could play a central role by addressing the use of fake certificates; performing regular audits at companies; and removing obstacles for small companies to obtain certificates, such as the high prices and lengthy processes.

4.4.3   THE LOCAL AGRICULTURAL SECTOR AND EDUCATION

The role of the grass-root sustainable food companies in Vietnam is potentially larger than just offering sustainable food products. The local agro-food companies often have built relationships on a family level in communities. Their educational task however be expanded to the younger generations if these sustainable food companies are connected to the educational system. It is already common for these companies to invite existing customers with their families and young children to the farms. This should be promoted on a larger scale, school field trips can then be organised. It is a way to use existing social structures but not necessarily those defined by the government. It would be defined by an interest in the same sustainable products. There would be a mutual benefit: the companies are able to expand their customer base through educating the children and thereby reaching the parents in the families; and people are connected (or re-connected) to the food producing systems.

4.4.4   THE LOCAL AND INTERNATIONAL AGRICULTURAL SECTOR

For reasons of agricultural sustainability local and small SMEs are important but in Vietnam they have a hard time competing in the high demanding market. In this context the role or power of larger companies and international players has been discussed, mostly as a growing threat for the survival of the local agro-food SMEs. However, it is believed that both are needed. The local SMEs for a conservation of local agricultural intellect, a diversity in crops and stimulus for a more independent local economy. And, the larger companies for stimulating food safety standards and transferring knowledge from other parts of the world to the local SMEs. Therefore, an exchange of knowledge between both parties should be stimulated. Vietnamese agro-food SMEs could especially benefit from more interaction with international companies in learning more about innovation and user-centred design skills.

4.4.5   DESIGN EDUCATION

The co-design workshops resulted in what was dubbed co-thinking. A stimulation of participatory design in design education in Vietnam is needed, as well as more appreciation of in-house (participatory) design skills. This should enable the SMEs to transcend from co-thinking to co-design in the future (and obtain the corresponding benefits on product and service innovation). The low design thinking skills can be regarded a product of the design education and education system in general in Vietnam. In general, the Vietnamese education system does not provide breeding grounds for design thinking skills; it is much focused on reproduction and repetition. Therefore there are reasons to believe that in other sectors, besides the agro-food sector, the symptoms of low innovation skills could be similar as well as the possible effect of introducing more participatory design skills.

Design skills in Vietnam are still largely in the stage of craft and 'making skills', little beyond aesthetics. Formal design skills are now introduced through two of the less art-focused Vietnamese design programs. Participatory design skills should become more common through these new education institutes. Also, currently the market is still developing through trial and error. Exchange with experienced companies as well as maturing of the (agro-food) industry for the local market should also aid the adoption of participatory design skills.

4.5   POSTLUDE: A REFLECTION ON THE ROLE OF THE RESEARCHER

This research was, besides scientific and societal relevance, also born out of personal curiosity, interest and expertise and some idealism to do good and instigate change. On a personal note, in my second year as a student at the faculty of Industrial Design Engineering that I heard about Viktor Papanek for the first time. I was devastated. I believed that I had indeed chosen to pursue one of the most harmful and phoniest professions. Luckily, Papanek also came with a solution to my sorrows. He was one of the first spokesman for eco-design with his book "Design for the real world: Human ecology and Social change" (1971). From that moment on

my interest was directed towards sustainable design and the role of the designer in shaping a sustainable society.

During the first year of this research however, I soon learned that as design *researcher* you do not so much shape society but rather observe and experiment how others shape society. Another disillusionment. But a consolation is that one cannot change the world alone which, for multiple reasons, is actually not a bad thing. The broadest research question one could pin to this research is how larger groups could be stimulated 'to do good'. Forgive me for using the rather edifying phrase 'to do good', it is a bit high faulting but I hope you can understand that it is the simplest phrase to use. To 'do good', is what every researcher and person strives for in the end, in one way or another. Everyone uses their personal understandings of doing good (inspired by more general understandings of doing good) and I have tried to define it in some way. A struggle I lost myself in, sometimes for weeks, but in the end it was my aim to make the research that was conducted understandable on a more concrete and practical level.

There is one more thing I would like to bring to the table. This is a question many people have asked me during the four years of research. Why are you, a Dutch person, going to Vietnam to do this research? The question implied was often: why does a Vietnamese person not do this research, why do you think you know better? This sounds like an accusation of pedantry, an aspect I have been wary of and tried to avoid as much as possible in this research. My answer often included some of the following. I do not think I know better but I am educated as an Industrial designer like not many people are in Vietnam and that gives me a special way to look at the problem. And yes, I did have some disadvantages in knowing very little of the language and not being accustomed to the cultural rules.

Not being Vietnamese also gave me some advantages. I was an outsider, and in that role one is often able to approach a situation differently one than an insider would. An outsider is able to see things an insider does not notice anymore or can easily overlook, such as long established habits. Being an outsider also allowed me to ask stupid and to others obvious questions. My questions would sometimes be culturally be impolite but they tolerated and answered because I was an outsider. Of course the other way around this was also true: being an outsider also made certain situations harder to understand and the possible ambiguity of certain answers

could have been be lost on me sometimes.

I would like to encourage researchers from other countries to do similar research, both in their own and in alternative cultures. I would be curious to see the results and the difference in method, questions and topics chosen. Overall I have tried to be respectful of Vietnamese habits and I was interested in them like a curious child. The insights provided me with a different perspective to look at the Western world again. It made me realize that it would be valuable if more researchers from developing countries would study our developed country (consumption) behaviour.

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PART II

1. Sustainable consumption in Vietnam

An explorative study among the urban middle class

ABSTRACT

The middle class of Vietnam is growing and so is their consumption, especially in urban areas. This is due to the effects of rapid economic growth, industrialization and increasing wealth in combination with a young, growing population. This paper aims to understand current consumption patterns and consumption categories that can provide a start for sustainable lifestyles among the Vietnamese middle class.

Data was collected in the capital Hanoi, in the north of Vietnam. The current level of awareness, knowledge and attitude was explored on five specific consumption topics: energy, transport, water, waste, and food. A combination of quantitative and qualitative data was collected: 5 focus groups, 5 in-depth interviews and a survey among 158 Vietnamese urban middle class consumers. The results are discussed according to the MOA model that explains behaviour as a function of three components: Motivation, Opportunity and Ability.

The research concludes that awareness and knowledge of the urban middle class in Vietnam on sustainable consumption is generally low. However, the motivation to live healthy lifestyles and protect the planet for their future generations is rather high. In order to support more sustainable lifestyles, the awareness of environmental issues needs to be increased; knowledge needs to be made available and accessible (ability); and role models need to set an example for the urban middle class of Vietnam.

Furthermore, health in combination with food is the most important reason for people to pursue a sustainable lifestyle (motivation) and the need to change was expressed. However, a general distrust towards business and governmental actors was also found. Therefore, opportunities for bottom-up initiatives for sustainable food consumption must be explored in the future. This could support in engaging the middle class of Vietnam in sustainable lifestyles.

1.1 INTRODUCTION

The middle class of Vietnam is growing, especially in urban areas (GSO, 2012, p. 45), due to the effects of rapid economic growth, industrialization and increasing wealth in combination with a young, growing population. The country has transformed from one of the poorest countries 25 years ago to a lower middle income country (World Bank, 2012). Vietnam is even believed to be the fourth most important economy in Asia (OECD, 2010), together with China, India and Indonesia, pulling the centre of economic gravity to the East.

With the growth of the middle class, overall consumption is not only increasing but changing too. The new middle class consumers are starting to look beyond their basic needs, shifting from subsistence to consumption lifestyles (Speece, 2002; Vu *et al.*, 2007; King *et al.*, 2008; Schmidt, 2009; De Vera *et al.*, 2010; World Bank, 2012; BCG, 2013). Conspicuous consumption described by Veblen (1899) in the Theory of the Leisure class, is also in Vietnam not a new phenomenon anymore.

The increasing consumption of the middle class impacts the environment and ideally Vietnam will not follow the path of developed countries by pursuing sustainable consumption only after reaching a state of over-consumption. Opportunities for sustainable consumption need to be identified to limit negative effects (or create potential positive effects) of the consumption changes. Tukker (2005) and Chiu *et al.* (2009), even suggest that countries, such as Vietnam, could and should leapfrog immediately to sustainable consumption patterns.

The goal of this article is to explore sustainable consumption from a product innovation perspective (see Joore & Brezet, 2014) and not limit it to the purchase phase. The use and disposal phase are equally, if not more, important for the environmental impact of consumption. In this article, five consumption categories, based on other sustainable consumption research (such as the UK Sustainable Consumption Roundtable, 2006; OECD, 2008; UNEP, 2011), were used: energy, transport, water, waste and food.

Wahlen *et al.* (2012) state that the success of introducing sustainable lifestyles (the way of living that reflects a household's values and attitudes towards sustainability) depends on the

adaptation and acceptance of the targeted consumers. Hence, to develop effective initiatives, it is crucial to understand the consumers, their lifestyles and their consumption patterns (Gilg *et al.*, 2005; Lange and Meier, 2009). A survey, five focus groups and a set of five interviews were conducted to first explore current (sustainable) consumption in Vietnam; and second, to identify possible opportunities for the future of sustainable consumption and change towards sustainable lifestyles in Vietnam.

1.2 BACKGROUND

1.2.1 PERSPECTIVE USED FOR SUSTAINABILITY

Although it is generally agreed that continuing to follow a traditional neo-liberal growth trajectory is not in line with sustainable development, and change is needed; the substitute trajectory is not agreed upon and still widely under discussion. Some argue that sustainable degrowth is the only, or at least a substantial part of the solution: we simply need to use less (Bouwerman, 2014; Kallis, 2011; Martinez-Alier *et al.*, 2010; Spangenberg, 2010). Scitovsky (1976) already reported the failure of GDP describing well being and therefore, others argue that we need to decouple economic growth from impact to 'live better by consuming less' (Jackson, 2008). Or as Van den Bergh (2011) argues, after his explanation that de-growth is an ambiguous term, we should use a-growth where growth is used without including the factor of GDP growth. However, a more holistic change (Seyfang, 2005; Krozer & Brezet, 2012) can also be a solution. This pathway sees prosperity not necessarily decoupled from growth but a narrow economic perspective is broadened. Seyfang (2005) argues that it is possible to found lifestyles upon values other than material consumption. Krozer & Brezet (2012) add that growth can also be environmental consumption becoming a larger part of total consumption.

Following UNEP (2015), both limiting consumption and changing consumption are included in the sustainability perspective. This means that for example both using less energy or eating less meat as well as using energy from renewable sources or food from different sources are included in the perspective of this study. Therefore, we do not follow the school of de-growth

(which would be strange in the context of Vietnam where many people still live below poverty line) but choose a broader perspective following Seyfang (2005), Krozer & Brezet (2012), Van den Bergh (2011) and Jackson (2008).

1.2.2   A FOCUS ON SUSTAINABLE CONSUMPTION IN VIETNAM IS IMPORTANT

The data from the General Statistics office (GSO, 2012) in Vietnam shows that more people are buying cars, more people are eating meat, more people own an airconditioning (AC). Between 2002 and 2012 the percentage of urban households owning motorbikes went up (56.7–88.6%); or refrigerators (33.7–74.7%); telephones (32.5–91.4%); or washing machines (13.8–48.1%). The AC is the largest source of urban household electricity consumption (Waibel, 2012) and ownership in urban households went up from 4.5% to 24.1%. In another study, specifically focused on the urban middle class, 62% was even found to own an AC (Waibel, 2012).

Consumption levels in emerging economies are still generally lower than in developed countries. However, the growing consumption in emerging economies has a far-reaching effect given the large populations (Lange & Meier, 2009; Reusswig & Isensee, 2009). India and China have the largest populations in Asia, but Vietnam is significant in size too with almost 95 million people.

Vietnam has a young population (in 2010, almost a quarter of the population was aged 0–14 (GSO, 2012, p. 46) and a young workforce that will contribute to the expansion of the middle class. In 2012, over 30% of the working population (65% of the whole population) was between 15 and 30 years old and another 25% of the workforce was between 30 and 40 years old (GSO, 2012, p. 105). The literacy rate of people over 10 is 93.1% (GSO, 2012, p. 67) and the levels of education are rising fast (GSO, 2012, p. 69).

The focus of sustainability research and policies has largely been on the developed world and consumers there have developed sustainability consciousness accordingly (Shadymanova *et al.*, 2013). However, emerging economies, such as Vietnam, are also important due to the population growth and the rapid changes taking place. Some even argue that for quickly developing countries like Vietnam, the question of sustainability has an even higher degree of urgency (Vergragt *et al.*, 2014). The urgency is driven by the rapid emergence of the new middle class with consumerist lifestyles (Banerjee & Duflo, 2008; King, 2008; OECD, 2010;

Vu *et al.*, 2007) next to the persistence of poverty and growing inequality.

But, different strategies are needed due different starting points and cultural contexts (Kuhn, 2009). Consumption patterns in emerging economies will develop in the coming years and Tukker *et al.* (2008) suggests there is the possibility of leapfrogging towards sustainable consumption before consumers become 'locked-in' (Jackson, 2008;Sanne, 2002). On top of that, some sustainable habits are probably still in place that can be embedded in the new emerging life-styles; hence, sustaining current habits can also be a strategy.

1.2.3   CONSUMPTION RESEARCH AND OPPORTUNITIES FOR VIETNAM LACK A SUSTAINABILITY FOCUS

Literature on the Vietnamese middle class is sparse, especially on the topic of sustainable consumption. King *et al.* (2008) agree that literature is sparse and characterize the young middle class as 'strongly interested in and committed to education, consumption oriented and interested in accessing news and information, with aspirations to improve and develop in personal and career terms.' However, sustainability is not mentioned. There have been others who studied the consumption of the Vietnamese middle class such as Maruyama and Trung (2007), who identified opportunities for supermarkets, or Nguyen (2003) who looked into conspicuous consumption, but again, neither mentioned sustainability. Nevertheless, Waibel (2012) studied the challenges for energy and housing in Vietnam and TNS (2008) surveyed people for a first glimpse on the subject of sustainable consumption. Low awareness and littering as thought to be the most important problem to solve were the outcomes.

Other studies address sustainable consumption in different parts of emerging Asia. Haron *et al.* (2005) for example explored the level of environmental knowledge in Malaysia and Chue (2009) or Reusswig and Isensee (2009) in China. More recently, organic food consumption was studied in Taiwan (Chen, 2007), China (Chen *et al.*, 2014) and Thailand (Kantamaturapoj *et al.*, 2012, 2013; Oosterveer, 2013). But the growing middle class in Asia has been subject of attention most due to the business opportunities for products and services (BCG, 2013; KPMG, 2012; Lange & Meier, 2009; McKnight, 2009). From this perspective it is often emphasized that people highly trust international brands, aspire to a consumerist lifestyle

and are sensitive about status. Moreover, BCG (2013, p. 9) states: 'Companies will likely have to encourage increased consumption, as well as trading up to higher-quality products and adoption of comfort and lifestyle products, within these categories.' The categories mentioned are packaged goods, cosmetics, motorcycles and refrigerators. Controversially, the two product categories that contribute most to the increasing impact of the middle class in emerging economies are (1) the consumption of meat and (2) the use of motorized vehicles (Maruyama & Trung, 2007; Meyers & Kent, 2004; The World Bank, 2012).

To conclude, sustainability is overlooked as a business opportunity, if not contrasted. There is a need for better and deeper understanding of the Vietnamese middle class and possible opportunities for sustainable consumption.

1.2.4   INTENTION-ACTION GAP FOR SUSTAINABLE CONSUMPTION

The results of the explorative study on consumption will be presented in the Motivation Opportunity Ability (MOA) model (Table 4) of Olander and Thøgersen (1995). This motivational model builds on the Theory of Planned Behaviour (Ajzen, 1991). The MOA model is used because it singles out Intention as a factor leading to a behaviour. Intention is often talked about in sustainable consumption in combination with the intention-action gap or 'green gap' (Vermeir & Verbeke, 2006; Ogilvy & Mather, 2011; Thøgersen & Schrader, 2012). This is the phenomenon that many people are motivated to engage in sustainable consumption

Table 4. MOA model (Olander & Thogerson, 2005). The factors explained.

MOA MODEL			
Motivation		**Ability** Both the *habit* and *knowledge* needed to perform the behaviour	**Behaviour** The outcome of motivation, ability and opportunity: how people behave
Attitude Personal values and motivations (combined with the belief evaluation)	**Intention** How much effort people are willing to put into the behaviour		
Social norm What 'everyone' thinks		**Opportunity** The contextual factors and materials / products available for the behaviour	

but fail to take action (Miniero *et al.*, 2014;Young *et al.*, 2010). It has often been identified in developed countries (see for example Vermeir & Verbeke, 2006) and it is important to understand and identify this for Vietnam, if one is researching possible action towards sustainable consumption.

The intention-action gap is important for this study, because the aim is not only to understand intention but also to identify possible opportunities that could lead to action. In the MOA model, ability and opportunity stand between intention and action (behaviour), possibly creating the intention-action gap. *Ability* and *opportunity* are highly influenced by the contextual factors, therefore it is important to understand and separate them with regard to the relatively new context for sustainable consumption in Vietnam.

1.2.5   A WORKABLE DEFINITION OF VIETNAM'S MIDDLE CLASS

Due to different measures and standards in the world, it is not easy to define the number of middle class people (Banerjee & Duflo, 2008), l*et al*one how many people will join the middle class in the coming years. One can define the middle class according to absolute income such as the ADB (2010), the World Bank (2007), and OECD (2010); or relative income such as Birdsall *et al.* (2000); or based on type of occupation, buying power or level of knowledge. Others consider political deliberations (Gunn, 1993), levels of democratization or emancipation (Stivens, 1998). Some argue that there is no such thing as a single middle class and speak of the middle classes. What is clear though is that in Vietnam the middle class is growing fast, some estimates are as high as a rise from 12 million in 2012 to 33 million in 2020 (BCG, 2013).

For this study a hybrid method was used, combining income, occupation and level of knowledge or education. Income was defined with a wide range to avoid domination of the factor. Moreover, because income in Vietnam is not easy to define because of the discrepancy between official salary and unofficial income (GSO, 2012, p. 206), this makes salary an unreliable criterion (Huong, 2015). This research used a monthly personal income of 5–30 million VND (230 USD-1380 USD). In urban areas the monthly per capita income was nearly 3 million VND in 2012 (GSO, 2012, p. 201), close to 1700 USD a year. The base was defined (in accordance with the Vietnamese project team of Get-Green Vietnam) as the salary of a

lower state employed person in Vietnam. The top was defined based on 10 times the average urban income of 2.9 Million VND (GSO, 2012, p. 201). The level of knowledge and education played a role in the inclusion criteria, for example, university students with a lower personal income range were also included in the sample.

1.3 MATERIALS AND METHOD

Data was collected in Hanoi, in northern Vietnam, with a survey (176 respondents), 5 focus groups of 10 people each and 5 in-depth interviews. To mitigate the validity risks of the study a combination of quantitative and qualitative data was chosen. The research was conducted within the project GetGreen Vietnam, which is part of the EU SWITCH-Asia program.

1.3.1 SURVEY

The survey was conducted digitally and in Vietnamese between November and December 2012. The survey was set-up to investigate current and future consumption behaviour of energy, water, food, waste and transport. The survey consisted of 46 questions and took respondents about 30 minutes to complete. Most questions were multiple choice or scale questions, combined with some open questions. The topics covered in the survey (and the qualitative research) can be found in Table 2.

The survey was send out to the people in the network of the, GetGreen project and received 176 responses. A group of 58 respondents fell below the income criteria for middle class. Among these were 40 students; due to the level of education their results were still included. Due to the type of occupation and education, 14 others with a too low income were also included freelancers without a fixed income and thus a lower monthly income (9), lecturers at Universities (3) and engineers with a lower income due to not working full-time (2). This excluded four responses in the end due to a too low income. A too high income excluded another 14 responses. The total of used responses was 158 (Table 1).

1.3.2   FOCUS GROUPS

Five focus groups were conducted in Hanoi between October and December 2012. Each group met twice and each meeting lasted about 2 h. The focus groups were audio recorded and notes were taken during the focus groups. Both notes and audio recordings were used to make a report of each focus group.

The focus groups were set up to uncover underlying reasons for results found in the survey. The different groups of consumers were selected for their expected diversity in consumption patterns and lifestyles. Two of the discussions (groups 1 and 5) were led in English and three in Vietnamese (groups 2, 3 and 4). The different groups can be characterized as follows:

- 1: Students (Members of a university environmental club)
- 2: Young mothers (a neighbourhood group)
- 3: Professionals (working in the same firm)
- 4: Elderly people (an elderly community group)
- 5: A mix of the type of people from the 4 groups above

1.3.3   INTERVIEWS

Between May and July 2013, five semi-structured interviews of about two hours were conducted in Hanoi. The interviewees belonged to the urban middle class and were chosen based on their demographic diversity: (1) a retired couple, (2) a couple with young children (3) a working mother with adult children (4) a student and (5) a young working single. The interviews were audio recorded and notes were taken these were used to make an overview of relevant quotes and insights per topic.

The goal of these interviews was to gain more insight into the topics covered in the survey and the focus groups and to be able to distinguish between personal and possible peer pressured motivations. A second goal was to understand people's daily rituals. Therefore, people were also asked to describe their daily activities from morning to evening in detail.

1.4   RESULTS

First, the general view on sustainable consumption in presented. Second, the results on the topics energy, transport, water, waste and food are presented.

1.4.1   GENERAL

In the interviews people often defined sustainability (bền vững in Vietnamese) with words such as good nature, green living and quality of life. Many people connected the term sustainability to health and mentioned issues such as air-pollution, water pollution, healthy food or climate change.

The survey showed that people want to live a more sustainable life for future generations (80%), health reasons (76%) and the environment (73%); saving money was the 4th reason (44%). Respondents indicated that sustainability is crucial for a better future and that they want to change. In the interviews people also said they believe they can make a difference and that in general people should consume less.

The interviewees all considered themselves more sustainable than others; certainly than the

Table 5. MOA model for sustainable consumption in Vietnam in general.

SUSTAINABLE CONSUMPTION			
Motivation			
Attitude Sustainability is good for the environment but expensive. It is not a big issue but in the far future it will be. Improving health and income are bigger issues.	**Intention** To consume more sustainable (when older and wealthier) without the government telling them what to do	**Ability** People feel they lack (trustworthy) knowledge and money to live sustainable	**Sustainable consumption behaviour** Currently few people pay attention to the sustainability aspect of their consumption
Social norm It is good to care for nature and encourage others to do so people do not want to tell others what to do		**Opportunity** People feel there are few opportunities nor system to support them (recycling system, good bus system or a good product labelling system)	

average consumer in Vietnam, but also considerably more than their family and about equally sustainable as their friends. In general, the interviewees considered the young (not the older), rich (not the poor), and educated (not the uneducated) females (not the males) to be more sustainable.

In the survey, people indicated a lack of opportunity and ability as reasons for not living a sustainable life yet: there is no system or infrastructure for sustainable consumption (57%), products are too expensive (47%) and we do not have enough knowledge (31%). Other reasons were the lack of trust in sustainable products (19%). Very few indicated the non-importance of sustainability (5%) or it not being their responsibility (2%). In the focus groups and interviews the lack of knowledge (more than means) was often mentioned as a reason for not leading a sustainable lifestyle.

Overall, people say they need more information because they do not feel empowered to make the right decisions. On the other hand, people do not always trust the labels or organizations that provide information. Interviewees also did not trust the government much to address and solve environmental issues or companies to make their products more sustainable (i.e. motorbikes). To live a sustainable life people said they would not like the government to make rules or laws, but rather take action themselves and not impose them on others either (Table 5).

1.4.2   ENERGY

Almost all respondents in the survey (96%) had tried to save energy before. 'Turning off lights and electrical devices when not needed' was the most popular measure (95%), second was using energy saving devices (65%) or fewer devices (59%). A smaller group (43%) had shared products with others to save energy. A majority of the respondents (60%) paid attention to the energy efficiency of the last product they bought and for many (69%) it had influenced their purchase decision.

Participants of the focus groups said that due to costs they try to minimize their energy use at home, especially regarding the AC. However, others said they always have the AC on the minimum temperature (168C) to make sure that during a blackout it will stay cool. Blackouts do not occur as often as a few years ago but the habit persists. At school or work people do not

Table 6. MOA model for (sustainable) energy consumption in Vietnam.

ENERGY			
Motivation			
Attitude Energy use makes life more comfortable but it is costly	**Intention** To waste as little money as possible on energy and to buy better, more energy efficient products (but not with a long r.o.i. such as solar heaters)	**Ability** People have energy saving habits to minimize costs	**Behaviour** Currently people watch their energy use when they are the ones paying for it
Social norm Wasting energy is a waste of money but devices that use energy therefor also a status symbol		**Opportunity** Energy efficient products are available but labels are misused and therefor distrusted Also, energy use is not always in people's control: AC at school or work	

pay attention to the use of the AC as they do not pay the costs. 'I stay at school for many hours a day and at home we do not have air-conditioning. At school the air-conditioning is for free so then I do not mind anyway.' People also say they cannot control it there and do not try either.

In the interviews, money proved to be an important factor for energy use again. Most of the interviewees had bought energy efficient products before but scepticism of the benefits was often expressed (Table 6).

1.4.3   TRANSPORT

The majority of the survey respondents (70%) use a motorbike to go to work or school, even more people (89%) own one. Almost half of the people own a bicycle (44%), but only a few people (6%) use it to commute. Only 17% own a car of which half use it to commute, and even less people use public transport (6%). Others do not use public transport because the bus is uncomfortable (57%), time consuming (52%), and it does not arrive on time (43%) or because stops are too far (40%). Airplanes are popular: 73% fly at least once a year and almost no one is willing to fly less (5%). People say they are willing to cycle and walk more (59%) and to purchase fuel saving vehicles (58%). Others say they are willing to take public transport (36%) or commute outside rush hour (35%).

Table 7. MOA model for (sustainable) transport in Vietnam.

TRANSPORT				
Motivation		**Ability**		
Attitude Transport means freedom. Time and safety are most important determinants for the mode of transport	**Intention** - To buy a better, more energy efficient motorbike but also to buy a car and fly more in the future - To be safe and waste as little time as possible in traffic	- The use of the motorbike is a deeply rooted habit and it is hard to avoid congestion since working times are not flexible - Knowledge on how to travel sustainable is not common		**Behaviour** Currently people use the motorbike for almost all transport, in the future people want to buy a car and fly more
Social norm Public transport and bicycles are for poor and old people and a bigger vehicle brings a higher status		**Opportunity** - Energy efficient motorbikes or vehicles are becoming available - Public transport is poorly organized and rain season and hot summers make walking and cycling uncomfortable		

In the focus groups and interviews, everyone agreed that transportation is a very important category for sustainability. Air-pollution is, next to food safety, the most mentioned issue and a daily struggle. However, people said that they do not feel it is their responsibility: better public transport or cleaner vehicles were their solutions.

Cycling used to be the most popular mode of transport in Vietnam but the motorbike has taken over: 'since I was a child I used a bicycle but now I am too familiar with the use of a motorbike and cycling goes too slow.' Older people and teenagers still use their bicycles or the bus because it is cheaper or because the motorbikes are too heavy or scary for them. 'I always drive my motorbike everywhere but my mother always goes by bus. She tries to influence me but it does not work. Once we went to visit my grandmother and she took the bus and I took my motorbike.' The young generation dreams of having a car in the future, the car is considered an ideal mode of transport because it is safe and comfortable in rain season or the hot summer (Table 7).

1.4.4   WATER

About half of the people in the survey (48%) said they use 20– 50 liter of water a day. Water usage was hard to estimate though, 30% said they did not know how much they use. People would like to save water using water efficient devices (82%) such as a toilets or washing

Table 8. MOA model for (sustainable)
water consumption in Vietnam.

WATER		
Motivation		
Attitude Water is important for hygiene and safety and drinking water needs to be safe and easy	**Ability** - Multiple ways to re-use water are known and embedded in habits	**Behaviour** Currently people spill little water on hygiene, cooking or cleaning. Away from home water is consumed in bottles, at home small tanks are used or water is boiled and cooled again.
Social norm Water is something you have to be careful with because it was not always available before	**Opportunity** - Water is now readily available in all seasons and not expensive - Water from the tap is not drinkable - Bottled water is available everywhere, in restaurants bottled water is the standard	

*Note: The "Intention" column appears between Attitude/Social norm and Ability/Opportunity: "**Intention** - To use as little water as possible - To use safe water for drinking and food preparation"*

machines. Other measures that require a behaviour change are far less popular: use less water by cleaning with less water (39%), bathing shorter (38%) or cooking with less water (28%).

According to the stories told in the focus groups, water is used consciously in Vietnam. People reuse water or try to use less water, to save money and because water used to be scarce during dry season: 'In summer I often recycle waste water because then there is a lack of water but in winter I do not.'

Most interviewees are conscious about their water use. For example: people re-use water that is used for cleaning vegetables to scrub the floor or water the plants. However, water usage is less of a concern than energy use: 'we do not waste a lot of water so we are not concerned about it, but for electricity use we are.' 'Water is cheaper (compared to electricity) and we do not use much any way so we are not so concerned about it.'

Many people in the research said they use water sparingly and consciously due to scarcity of water in the past (small intention-action gap). Therefore it might not be the right category to promote change but it is a good category to show that some of the current habits need to be preserved. Water reuse in Vietnam can also be used as an example for consumers in developed countries (Table 8).

1.4.5   WASTE

The majority of the survey respondents (60%) say they do not separate household waste metals, paper or organic waste. They claim there is no one to collect this (61%), that they do not waste much of it (26%), that it takes too much effort to separate (20%) or that there is no point in separating (9%).

Many people are concerned about littering because cities are visibly polluted (especially with plastic). People always mention 'not using plastic bags' in relation to sustainable actions. Plastic bags are mostly used for food products: 'When shopping for products that are not food it is easy to not use plastic bags. For food and then especially at the supermarket it is hard to not use plastic bags.' Also, in restaurants chopsticks come in plastic wrapping; separately packed clean wipes are the standard and plastic water bottles are on every table.

The interviewees said they did not buy second hand products; new things were preferred. However, people felt that throwing out products is a waste of money and products are repaired over and over. Contradicting the survey, some people said they sell their paper or metal waste to collectors that come by the houses. However, this is becoming less popular because recycling does not pay much (Table 9).

Table 9. MOA model for (sustainable) waste and consumption in Vietnam

WASTE			
Motivation			**Behaviour**
Attitude - New is better than second hand but wasting products is a waste of money - Littering (of plastic bags) is a big problem	**Intention** To waste as little as possible and use less plastic bags	**Ability** - Disposable products and plastic bags are part of daily eating habits - People do not know how to ban plastic bags from their lives	Currently many people throw their trash on the streets, on the other hand products are repaired many times before replacing it
Social norm - Many people in Vietnam are still poor, so waste has a bad connotation - New products add to a higher status		**Opportunity** - There are (almost) no public recycling bins - All stores give out plastic bags - Product repair services are available everywhere	

1.4.6   FOOD

In the survey, the comments section was used most to discuss the category of food. When the respondents buy food, quality is the most important criterion (80%), second is health (60%), third is price (46%), taste and flavour are fourth (31%) and the brand comes fifth (25%). To eat more sustainably people are willing to eat more organic food (59%), eat less meat (55%), prepare food with less waste (51%), eat more local food (42%) and store less food in the fridge (27%).

People feel that meat is an essential part of their meal. 'For dinner I had fish but I had to pretend it is meat otherwise it does not feel like a complete meal.' It is also believed to give you energy, more then vegetables would do. 'I have to eat meat every day otherwise I become crazy if I do not eat meat.' 'I am a pregnant now so I cannot eat less meat.' A lot of men consider meat to be the main part of the meal; their wives find it hard to change that. 'Eating less meat is difficult to do in my family because my husband only eats meat.'

The female interviewees said that balancing their time between their jobs and the household leaves them little time to pay attention to certain things. 'Because I have to go to work early I have no time to reduce the temperature of boiled food before storing it in the fridge.' The busy lives of young mothers means that routines are different from that of their mothers. 'I have to go to the supermarket every weekend to buy food for the whole next week so some food will be out of date before we use it.'

People spend about half of their income on food and drinks (GSO, 2012, p. 242). The focus groups and interviews showed that meals are an essential part of people's daily rituals, traditions and cultural identity. People said they often exchange information on where to get good food, tasty food, safe food or healthy food, especially for babies or young children (ability, knowledge and opportunity). Unlike western consumers, for whom flavour, texture and price (Wirth *et al.*, 2011) or taste equal to quality are the most important food criteria (Dahm *et al.*, 2009), freshness showed to be the most important criteria for the Vietnamese consumers.

Sustainability in combination with food gathered everyone's attention, due to the topic of food safety. People said that incidents of 'unsafe' food (as defined by participants: food with

pesticides, chemicals or antibiotics) are frequently featured in the media. People also say that fake 'safe products' are sold: products that claim to be safe (natural, non-chemical) and good for your health but use imitation certificates or labels. Mothers were especially concerned about food safety because of the health risks for their young children. Some said they buy organic vegetables just for their children and regular ones for themselves.

People buy most groceries at the open-air markets; (Wertheim- Heck *et al.*, 2014 state that 95% of vegetables is still bought at the, unhygienic, open-air markets in Hanoi). Freshness was the most important aspect of quality mentioned by the interviewees and therefore people shop for food every morning. Products are not labelled on the open-air markets and people find it hard to distinguish 'safe from 'unsafe' food. People tend to know the person they buy food from and built up trust through a personal relationship (Table 10).

Table 10. MOA model for (sustainable) food consumption in Vietnam

FOOD				
Motivation		**Ability**		
Attitude	**Intention**	- Using left overs is standard	**Behaviour**
- Quality is the most important in selecting food and freshness is believed to ensure healthy and safe food.	- To eat healthy, nutritious and safe food	- Vegetarian recipes are not (well) known	Currently people eat meat at least
		- People want to know how food is made to judge the quality	once a day and on average one
		- Half of the household's spending goes to food	meal a day is eaten outside
- A nutritious meal contains meat	- To provide healthy, safe and nutritious food for the family, especially the young children		the house. Most
Social norm		**Opportunity**	ingredients for
- Rice or noodles, meat or fish, and vegetables makes a meal		- 'Safe' food is available (but more expensive and not available as close to home)	home cooked meals are
- It is bad if to not serve enough food but food waste is a sin	- To not waste food at home	- Fresh food at the street markets is unlabelled	bought at the open-air
- Eating food is a social activity		- Misuse of eco-labels is common	markets
		- Food outside the house comes with a lot of plastic packaging	

1.5 DISCUSSION

1.5.1 PEOPLE IN THE SAMPLE

Data was collected in the capital Hanoi, in the north of Vietnam. Because the differences in context, retail development and urban infrastructure between the north and south of Vietnam are significant, the results cannot simply be applied to the whole country. The respondents of the survey were mostly recruited through the network of Get Green Vietnam. Get Green Vietnam promotes sustainable consumption among the urban middle class of Vietnam and therefore it is assumed that the respondents are more open towards sustainability than the average middle class consumer. One might say that if placed on Roger's curve (1983), they would lean towards the innovator side of the consumer adopter categories. However, for the focus groups and interviews, participants were also recruited outside the Get Green Vietnam network to ensure a more representative sample of the middle class.

1.5.2 DIFFERENCES BETWEEN THE QUANTITATIVE AND QUALITATIVE DATA

The three data sets largely with each other. The survey showed what was important and the focus groups and interviews uncovered why it was important for people. The largest difference between the survey and focus groups plus interviews was seen in the category of transport: see Table 2. Large differences between the outcomes of the focus groups and interviews did not occur. Hence, it can be concluded that social pressure to comply with the dominant opinion of the group in the focus groups had little influence on the results.

1.5.3 MOA MODEL

The MOA model was able to describe sustainable consumption behaviour and identify opportunities based on an intention-action gap. However, using the model for these purposes also has some limitations. First, the differences between contextual opportunity factors that can or cannot be influences are not distinguished. Second, for Ability, the knowledge and habit component are not separated but in this research it was found that knowledge was often closely related to motivation and habit more to contextual opportunity. It is highly recommended to make these distinctions in the future when the MOA model is used in this context.

1.5.4   CURRENT (SUSTAINABLE) CONSUMPTION BEHAVIOUR

The research questions for this article were: what is the current status of (sustainable) consumption in Vietnam (static) on the consumption categories energy, transport, water, waste and food. Second, what are possible opportunities for the future of sustainable lifestyles from a product perspective (dynamic).

The Vietnamese middle class still has lower levels of consumption than consumers in the developed world. However, what was seen from the data (GSO, 2012) presented in the background is that in the last decade it has been changing fast. This research shows that for some consumption categories people intend to continue this change, such as for transport (fly more and buy a car) and buying more new products (instead of second hand). When it comes to transport, people recognized the need for change, motivated by problems of air pollution and traffic congestion. However, the intention to change was low because the responsibility was put on the government and business to provide better public transport and better vehicles (to increase opportunity). For water consumption on the other hand, people said to still have rituals embedded in their daily lives from the time of scarcity.

For energy, food and waste people said they intend to consume more sustainably, motivated by personal benefits of money, health and future generations. This is more in line with what Martinez-Allier (2004) calls 'environmentalism of the poor': 'it is not with the aim of protecting nature, but rather in terms of protecting oneself against nature, whether in the context of natural disasters or in the context of the degradation of natural resources.' Nonetheless, the results showed that the intention-action gap exists in Vietnam too.

People said that for energy use they intended to adopt more energy efficient products to save money, not for the reason of sustainability. Despite the intention, information on energy efficient products is not always understood and received with a degree of scepticism, which hinders action.

Littering was one of the most mentioned sustainability related problems in this research because it is a visible problem: streets are dirty, and plastic bags are lying around everywhere. Most of the littering is connected to food consumption. However, people also said they did

not know how (ability, knowledge and habit) to ban plastic bags and packaging from their lives (intention-action gap).

Next to littering, 'safe food' was mentioned most and people showed a high motivation and intention for sustainable food consumption because of health reasons and future generations. In other emerging Asian countries, such as China and Thailand, a high concern for food safety issues relating to personal health was also found (Kantamaturapoj *et al.*, 2012; Verain *et al.*, 2012; Chen *et al.*, 2014). Incidents of unsafe food are a great concern and it has created a general distrust in the farming industry in Vietnam (see Wertheim-Heck at al, 2014, for a detailed paper on food safety concerns in Hanoi). Many of the people said they find 'safe food' products hard to find (lack of opportunity and ability) and therefore refrain from action. Another reason people mentioned was the habit of going to the open-air markets next to their houses (ability, habit) where safe food is hard to find and identify.

1.5.5 OPPORTUNITIES FOR A CHANGE TOWARDS SUSTAINABLE LIFESTYLES

Out of the five categories used in this research, food seems to be the most promising category to engage people in sustainable lifestyles. For the other four categories people in this research showed less intention (transport), already high action (water) or purely monetary motivations (energy). Waste is closely connected to food consumption and therefore an interesting topic to pay attention to in the future.

Our results do not imply that the other categories are not important. One of the most impactful changes of consumption in emerging countries is for example in transport (Maruyama & Trung, 2007; Meyers & Kent, 2004; The World Bank, 2012) and our research also that people's ambitions for the future were to buy a car and fly more and that they hold the government and business responsible for sustainable change. These ambitions (intentions) and lack of feeling responsible for change (attitude) does not make transport the logical choice to prompt sustainable lifestyles.

Sustainable food in this research was understood as the use of fewer chemicals (safety risks), less food waste, less dairy and meat and the use of more local or seasonal food. There are six reasons why food, out of the five categories, can be a good start to promote

sustainable lifestyles among the urban middle class of Vietnam: (1) people intend and are highly motivated to consume more sustainable food; (2) food aligns well with the two main motivators for sustainable consumption in general (health and future generations); (3) food is closely connected to cultural identity, as in China (Chen, 2014); (4) food is a beloved topic of conversation and eating a social activity; (5) half of the household's spending goes to food; and (6) barriers for sustainable food consumption are lower than for the other consumption categories, where long term and high investment are needed (such as buying an electric vehicle, a new AC or installing a solar heater).

Due to the misuse of eco-labels and little transparency of large national businesses, their products were not trusted much. Therefore, a bottom-up movement of small food initiatives has a high chance of succeeding in Hanoi, also because word of mouth is still one of the most effective ways of advertising in Vietnam and social relationships highly determine the behaviour patterns of people. Kantamaturapoj *et al.* (2013) found a comparable situation in Bangkok, where 'specialized shops are not so much focused on certification but rely on trust created by directly communicating with consumers in an informal and friendly way in the shop and organizing activities with them.' A third reason for a bottom up approach is because people said they rather enforce change upon themselves than follow regulations of the government. People also have little believe that the government working hard on sustainability. This is also found in other countries with a soviet history; there sustainability is sometimes regarded as impacting industrialization and therefore an ideological taboo (Shadymanova *et al.*, 2014).

To get a social movement going, role models should set an example because this calls to the personal trust and relationship. The interaction between small food initiatives and consumers must be stimulated to increase trust and transparency. As Verain *et al*, (2012) also suggest, gaining insights into the overlapping characteristics of healthy and sustainable consumer segments will be useful in developing more efficient promotional campaigns to stimulate healthy and sustainable lifestyles. Future research should also focus on how (local) businesses can provide the right information (on health in combination with sustainability) and incentives for Vietnamese consumers to get more involved in sustainable food consumption.

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Interlude I: A day in The Capital

This interlude gives a peek into what a day in Ha Noi looks like. Some basic routines are described and illustrated with pictures, from dusk until dawn. This text is made up out of the 1,5 years the researcher spent in Vietnam, the pictures also come from the private collection.

A DAY IN THE CAPITAL

The morning routine

A normal day in Hanoi, the capital of Vietnam, starts early. The first market stalls and street vendors drive their mobile shops into the city before the sun rises around 5.30 am. Most of them use motorbikes but some of the poorer vendors still use their bicycles and pedal up to 4 hours from the rural areas to the city to sell their goods. Overloaded bicycles carry ingeniously balanced amounts of merchandise. The (often female) Vietnamese vendors move their mobile shops to the same spot on the pavement they have been sitting on for years now.

The sun begins to rise and the families that live in the cities start to wake up. Mothers or grandmothers of the families leave their houses to find their favourite street vendors close by. They buy all the ingredients needed for a freshly prepared breakfast for the whole family. Some do some exercise in the park before the sun is completely out and then breakfast is served. Often breakfast includes some left overs of the dinner of the previous day and a soup based dish.

Going to work

Then the family prepares to get out on their motorbike and leave the house. If the family has the means they have a motorbike and maybe even two, the real upper class maybe even has a car. Most families in the city share their motorbikes between them though, father, mother and children all on the same motorbike. The get on their motorbike between 7.30 and 8.30, exactly when also everyone else does. Especially the ladies are well covered in clothes to have their preciously preserved white skin come in contact with direct sunlight. All faces are covered with face-masks to inhale the least possible amount of air pollution. Children are dropped off at their expensive schools. Education is considered extremely important and a lot of the family budget goes to the education of the young children.

Mother and father both go to work, Vietnam has a very high female working population. If mother does not have her own motorbike, then dad also drops her off. At work people

respect their boss and are used to follow orders from their boss. The air-conditioning is turned up, because it can get very hot during summer in Hanoi, and at work you do not pay for the expensive cool air.

Having lunch

During lunch time people often go out to the streets to have some food. Street vendors of the morning have been replaced by the ones of lunchtime. Sometimes these are the same vendors and they have built up their stall again. On some days the food stalls are nowhere to be found though. Those are the days that the local police just came by to fine everyone that illegally sells food on the streets. Most street vendors warn each other and will be able to pack up their things before the police arrive to their street.

Back at work people take a power-nap at their desk, on their desk or under their desk. Then work continuous. Men go out for cigarettes once in a while and in the afternoon the women gather in the kitchen to prepare an afternoon fruit snack. By the end of the working day, between 5 and 6, people rush home again like everyone else. Stuck in traffic and with smoggy air due to congestion people go back to their homes. Ingredients for dinner are bought and around 6 pm it is served: rice and a broth are the base of each Vietnamese dinner, accompanies by at least two meat or fish dishes and a vegetable dish. What is left over is saved in the fridge for breakfast or lunch the next day.

The evening routine

Now the sun is down, work is done and everyone is fed. It is time for some relaxing: taking a stroll around the park, having a coffee with friends, have your nails or hair done, check Facebook on your phone and watch some television on the background. Slowly the city goes to sleep and around 10 pm the city is quiet.

The street vendors have all gone. Men and women in their official orange suits have swept up all the garbage, all that what the informal garbage collectors did not gather before them. In southern Saigon, the biggest city in Vietnam, several circle K's or 7 eleven stores are still open for some midnight shopping, while for northern Hanoi, the country capital, the day is slowly ending.

2. GetGreen Vietnam

Towards more sustainable behaviour among the urban middle class

ABSTRACT

In Vietnam, the middle class is expected to grow from 12 million to 33 million people between 2012 and 2020. The growth causes an increase as well as a shift in consumption. Products that were not accessible or affordable before will become increasingly so, such as cars, dishwashers, meat products and airconditioning. In urban areas the changes are most prominent and so are the side effects: increased amounts of waste, smog, pollution and use of fossil energy or pesticides.

The main objective of this study was to identify sustainable behaviour that followed or did not follow from the intervention project GetGreen Vietnam. 604 urban middle class consumers participated in a series of sustainable consumption trainings. Before, during and after the trainings, quantitative and qualitative data was collected on 90 sustainable actions.

64% of the participants self-reported to be engaged in a sustainable action before the intervention and this percentage increased to 80% after. The group environment and activity-based meetings of GetGreen Vietnam project (GGVN) were critical for the success of the intervention. Participants reported that before GGVN certain actions were already habitual as a money saving strategy (e.g. sparse electricity use or food leftovers re-use) or due to past scarcity (e.g. sparse water use). Many participants reported the intention to buy sustainable products but fewer participants took action to do so.

A powerful strategy toward more sustainable consumption in Vietnam can be to create more group based activities around the themes of energy and shopping for food. A twofold approach is needed that both installs new sustainable consumption patterns and keeps old habits rooted in daily rituals. Role models should set an example for the young population and consumers and (Vietnamese) producers should be better connected to increase mutual trust and transparency.

2.1 INTRODUCTION

In Vietnam the middle class is rapidly growing due to economic prosperity (GSO, 2012; KPMG, 2012). Some even estimate a growth from 12 million in 2012 to 33 million in 2020 (BCG, 2013). The newly formed middle class, in emerging markets such as Vietnam, is considered the main group that is affected by the economic prosperity (Nguyen, 2003). The middle class is the key to a thriving market oriented economy and sustaining future economic and social development (Vu *et al.*, 2007). Consumers are increasing and changing their consumption as a result (Schmidt, 2009; Speece & Nair, 2000; Speece, 2002). Products that were not accessible or affordable before are becoming increasingly so, such as cars, meat products, dishwashers or air-conditioning (Waibel, 2012). The Household Living Standards Survey of the General Statistics Office of Vietnam (GSO, 2012, p. 287) shows that in less than a decade the number of durable goods per household increased drastically, especially in urban areas. Between 2004 and 2012, the number of motorbikes per 100 urban households has risen from 96 to 146, telephones from 78 to 213, refrigerators from 45 to 76, air conditioners from 8 to 31 and washing machines from 21 to 49.

The negative consequences of increased prosperity are the visible side effects of consumption: increased amounts of waste, smog pollution, use of pesticides, and fertilizer and fossil fuel energy use in the agricultural sector. People in urban areas complain about air pollution, streets full of waste and food safety (De Koning *et al.*, 2015; TNS, 2009; Waibel, 2012). However, little is known about how Vietnamese consumers contribute to increasing the sustainability of their homes, neighbourhoods and cities.

A sustainable consumption intervention for the Vietnamese urban middle class was implemented in the form of a series of group trainings. Recommendations from similar previously executed interventions (e.g. DEFRA, 2008; GAP, 2014; Staats *et al.*, 2004) were followed: the trainings were organised in groups for social support, highly motivated participants were selected and a broad range of topics was selected to reduce a generalization problem. Consumption, in this study, was defined to include buying, using and disposal of products. Thus, focussing on all aspects of sustainable consumption behaviour.

The main objective of this study was to identify sustainable behaviour that followed or did not follow from an intervention among Vietnamese consumers. Quantitative and qualitative data were collected before, during and after a series of trainings for sustainable consumption. These formed the basis to develop initial directions for sustainable consumption strategies

2.2 BACKGROUND

2.2.1 SUSTAINABLE CONSUMPTION IN VIETNAM

The literature on the Vietnamese middle class, and particularly the urban middle class, is sparse (but, see Fforde & De Vylder, 1996; King, 2008; Matthaes, 2011; Maruyama & Trung, 2007; Nguyen, 2003; Nguyen *et al.*, 2010; TNS, 2009; TNS, 2011; Vu *et al.*, 2007). Also, examples can be taken from Eastern European counterparts where sustainable consumption is also still a rather new concept. There, few people are aware of the concept, "sustainability", and even less take action (Brizga *et al.*, 2014; Shadymanova *et al.*, 2014). Shadymanova *et al.* (2014) also point out that sustainable consumption can be ideologically taboo in countries with a soviet history. These examples may be relevant for the case of socialist market oriented Vietnam.

The limited research within Vietnam shows that the (urban) middle class is sandwiched between the high and low-income classes. This makes them extremely conscious and sensitive about their newfound status. Adopting a consumerist lifestyle is becoming a way to enhance one's identity and social status (KPMG, 2012; Maruyama & Trung, 2007; Nguyen *et al.*, 2010; Fforde & De Vylder, 1996). They tend to engage in the consumption of luxury goods, aspire to foreign brands and value the quality and trendiness that are associated with these brands (Nguyen *et al.*, 2010; TNS, 2011; Speece, 2002). Education, achievements and accessing news and information (increasingly through the internet) are additional ways to express status (King, 2008; KPMG, 2012; Matthaes, 2011; Vu *et al.*, 2007).

Sustainable consumption in Vietnam is an urgent topic. The changes that are rapidly taking place lead to the opportunity to introduce new, sustainable behaviours. Lewin (1951) explains

that in order to change towards new behaviours, old behaviours need to be 'unfrozen' and adapted into new behaviours that need to be 'frozen' again. One could say that currently the behaviours of the Vietnamese middle class are 'unfrozen' at the moment that provides an opportunity to introduce and "freeze" sustainable habits for the future. It is crucial now because it is hard to change habits after they have been "frozen" into a behavioural pattern. Developed countries now face this challenge of shifting towards sustainable consumption. However, in emerging markets there is time to guide consumption towards better patterns, before unsustainable practices or habits become embedded in a society's behaviour, possibly leapfrogging towards sustainable practices (Tukker *et al.*, 2008). Despite the urgency, only limited research has addressed this topic in Vietnam (Waibel, 2012; TNS, 2009).

2.2.2   STRATEGIES TOWARDS SUSTAINABLE CONSUMPTION

Most activities of sustainable consumption today deal with strategies of material substitution, pollution prevention, consumer awareness building and end-of-life management practices optimization (Mont & Plepys, 2008). These activities have not been sufficiently successful and the right approach yet needs to be found. A shortcoming of current strategies is that they focus on building awareness but they fail to establish actual behaviour change (Dembkowski, 1998; Tangney *et al.*, 2007; Thøgersen, 2010).

Sustainable training interventions, similar to the one described in this study, have been executed in developed countries (e.g. GAP, 2014, 2006; DEFRA, 2008; Staats *et al.*, 2004). But, strategies for sustainable consumption from developed countries cannot simply be copied to emerging markets such as Vietnam. The starting points, on-going changes and values are different (De Jong & Kroesen, 2007). In the developed world both green consumers and average consumers are aware that their consumption impacts the environment. For example, people know that using less plastic bags, recycling paper or using less water benefits the environment. However, this knowledge does not always make people act accordingly, even if they feel that it would be the right thing to do. This gap between intention and action is often referred to as the intention-action gap (Vera de *et al.*, 2010; Thøgersen, 2010; Vermeir and Verbeke, 2006; Young *et al.*, 2010; Miniero *et al.*, 2014) or green gap (Ogilvy & Mather, 2011).

Three components are needed simultaneously to increase sustainable consumption: motivation/intent, ability and opportunity (Tukker *et al.*, 2008). Their relation to the intention-action gap, are well explained by the Motivation Opportunity Ability (MOA) model (Ölander & Thøgersen, 1995, Fig. 16). This model assumes that intentions depend on personal attitudes and social norms. It also shows that the intention behaviour relationship is moderated by ability and opportunity. This suggests that it could be that a low ability or a low opportunity is making it difficult to act on an intention, causing an intention-action gap. Therefore, the focus of the intervention in this study was to stimulate ability or opportunity components rather than motivational components affecting sustainable action. The materials & method section explains the detailed set-up of the intervention.

The MOA model was used as a theoretical basis for the intervention because simplicity was sought after. The MOA model provides this simplicity and consists of the three basic components that are also found in other, more complex behaviour change models. For example, at the core of the behaviour change wheel (Michie *et al.*, 2011) are: motivation, capability and opportunity. Or, in the theory of interpersonal behaviour (Triandis, 1977), behaviour is explained by habits and intention,moderated by facilitating conditions. Or, in the Comprehensive Action Determined Model (CADM), Klöckner & Blöbaum (2010) use
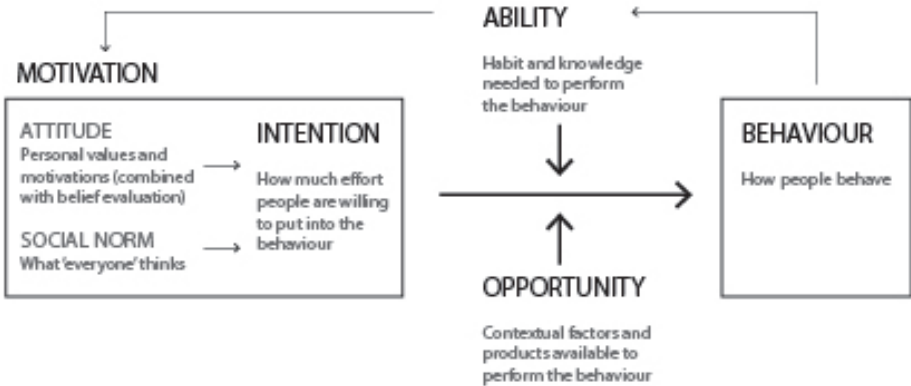

Figure 16. The MOA model (Ölander & Thøgerson, 2005).

habitual, intentional and situational processes to predict ecological behaviour. These models all assume that external conditions and habitual processes are moderating factors between intention and behaviour. This sets them apart from the widely used model of Theory of Planned Behaviour (Ajzen, 1991), where only the direct effect of intention on behaviour is considered. However, Ajzen (1991) showed that the intention to perform behaviour, together with perceived behavioural control account for considerable variance in the actual behaviour.

2.3   MATERIALS AND METHODS

2.3.1   THE GETGREEN VIETNAM PROJECT (GGVN)

Data for this study were obtained from the intervention project GetGreen Vietnam (GGVN), funded by the EU Switch Asia programme. The goal of GGVN was to stimulate change by training over one thousand consumers on sustainable consumption in urban Vietnam. The trainings were carried out in two phases of 26 groups. The first 26 groups were trained between January 2014 and August 2014 and the second 26 groups between October 2014 and June 2015. In this paper only the first groups are included because during the time of writing the second set of 26 groups were still being trained.

THE 9 CONTEXTUAL CLUSTERS

1) 3R in the Offce
2) Towards a Green Office
3) Around the Supermarket
4) On the Road Again
5) Energy Efficiency
6) Home Recycling Station
7) Live like a Farmer
8) Bathroom of the Future
9) Kitchen of the Future

Figure 17. The 9 cluster names and contexts.

Design of the training content

The training content was developed by the GGVN project and constructed around 90 actions for sustainable consumption. The actions were drawn from previously executed sustainable consumption projects in developed countries (e.g. DEFRA, 2008; GAP, 2014; The UK sustainable consumption roundtable, 2006; Staats *et al.*, 2004). Actions were systematically

selected and adjusted to the context of urban Vietnam. The approach to consumption was broad: including buying, using and disposal actions. Actions were formulated in concrete and actionable terms because the goal of GGVN was to break patterns, widen people's (view on) opportunities and establish new habits. For the project, because of the focus on practicability, actions were also grouped according to context. There were 9 contextual clusters (Fig. 17) with 4 to 15 actions each.

Set-up of the trainings

The participants were trained during 6 meetings in 26 groups of 15-25 people, 604 in total (see paragraph 2.3.3 for details on selection). During the first meeting, participants selected two contextual clusters. The actions within these two specific clusters would become the group's focus. The following 5 meetings alternated between information and field trip meetings. To ensure the quality and consistency of the meetings, the GGVN project team trained a group of 40 people and selected 26 of them to be the trainer of a consumer group. During information meetings, the trainer introduced the actions within a cluster, provided background information and the participants discussed their previous experiences with the actions. Consecutively, the trainer organised a field trip where the actions were practiced in the actual context. For example: food certificates and labels were discussed during an information meeting. In a subsequent field trip, the group met in a supermarket where they were encouraged to look for the labels, understand them and help each other select a product.

2.3.2   SET-UP OF THE SUSTAINABLE ACTION SURVEY AND MONITORING ACTIVITIES

A survey was conducted among the 604 participants of the GGVN project. Before GGVN, participants were surveyed on all 90 sustainable actions and after GGVN only on the actions of their two selected clusters. During and after GGVN, monitors met with individual participants to verify their progress and to get feedback on the program (Fig. 18).

Survey

The Sustainable action survey consisted of 90 sustainable actions (hence the name) with identical answers options. The options were: 'yes', 'no', 'I intent to' and 'not applicable.
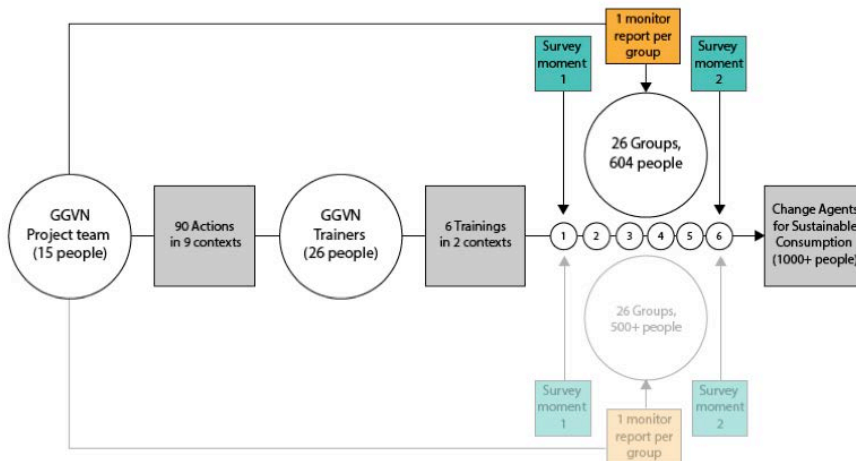
Figure 18. Flow of the GetGreen
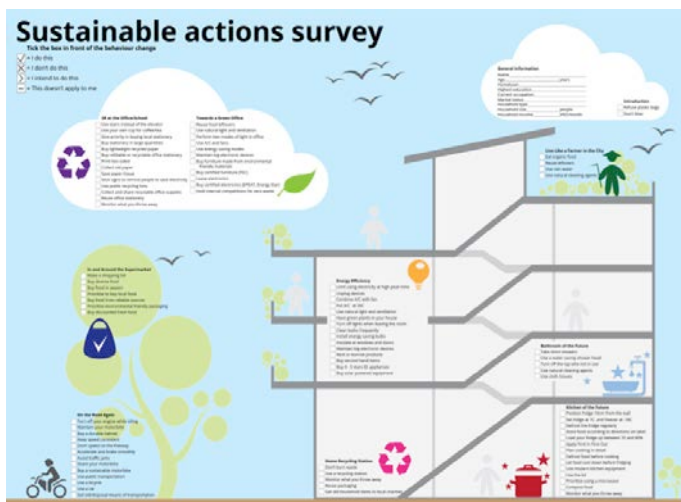Vietnam project and the data
collection moments.

Figure 19. Sustainable actions
survey, English version.

Answering scales were not used because pilot tests had shown that participants find it hard to use scales. In the survey after GGVN the answer 'Yes, and I do this more' was added to the answer options:

- V = Yes, I do this
- X = No, I do not do this
- > = I intend to do this
- K = Not applicable
- + = Yes, and I do this more (only after GGVN)

Before GGVN, during the first meeting, participants filled out the survey individually for all 90 actions on A3 paper. The survey was in Vietnamese but an English version can be found in Fig. 19, and a full page version in Appendix A. After GGVN, during the last meeting, the survey was conducted again, but only for the actions within the two clusters that the group selected. Also, this time the survey was not done individually but the trainers scored for each action how many participants answered 'yes', 'more', 'no', 'intending to' or 'not applicable'.

Set-up of the monitoring activities

Members of the GGVN project team fulfilled the role of monitors. They observed 2 or 3 meetings of each group to verify the quality of the trainings and the progress of the consumers. The monitors also interviewed 2 or 3 randomly selected individual participants about their progress after a meeting. After GGVN, monitors visited the homes of one participant per group to conduct a longer interview, this was video recorded. One monitor report was built per group based on the meeting observations, interviews and the final home visit. These reports were used to qualitatively add to the quantitative survey data. This adds to the understanding of why people did or did not do certain actions.

2.3.3   PARTICIPANTS

The participants of GGVN were recruited through the project's network and the personal network of the trainers. The selection criteria for participation were a high motivation for sustainable consumption, a middle-class income, an age between 18 and 55 and living in an urban area. Participants' motivation needed to be relatively high because the project was not

focused on increasing motivation but on increasing action. Trainers identified this in a short interview before GGVN. A middle class monthly income was defined to fall between 5 million VND and 30 million VND (230-1380 USD). For a detailed definition of the Vietnamese urban middle class see De Koning *et al.* (2015). The urban areas were selected based on city size and spreading: Ho Chi Minh City (HCMC) (south), Ha Noi (north), Da Nang (middle) and Can Tho (south) are 4 of the 5 largest Vietnamese cities.

Participants were also selected within three groups of potential change agents: students, community members and office colleagues (Table 11). Students were expected to be potential change agents because they will form the next generation; community members (mostly stay at home mothers or retired citizens) because of their strong tie with the neighbourhood; and office colleagues because they can possibly influence office culture. Generally, participants were already a group before GGVN: being classmates, colleagues or members of the same community club. Building on these existing social structures was expected to support the continuation of activities after GGVN.

2.4   RESULTS

The results are presented in four parts. First, the method of data analysis is generally described. Second the quantitative results of pre-project survey are presented and subsequently those of the post-project survey. The last part presents the qualitative results of the monitoring reports.

Table 11. Type of groups per city, before GGVN and after GGVN in brackets

	Can Tho	Da Nang	HCMC	Hanoi	Total
Community groups	1	2	2	2	7
Student groups	3	1 (0)	2	2	8 (7)
Office groups	1	2	4	4	11
TOTAL	5	5 (4)	8	8	26 (25)

2.4.1 DATA AND ANALYSIS

The survey before GGVN received 604 responses. The average response rate per action was 93% or 564 participants. Participants sometimes left actions blank; therefore the total number of responses per action differed. These actions left blank were not treated as a no-answer or not applicable-answers but left out. Percentages of answers were calculated based on the amount of participants for each specific action.

The post-project survey received 501 responses. The average response rate per action was 24% or 115 participants. This is much lower than for the pre-project survey because the groups now only answered for the actions in the two clusters they had been working on. Also, throughout GGVN there were a number of participants that dropped out and did not complete the post-project survey: a total of 78 participants.

The 26 consumer groups all provided data of the survey before GGVN. One group did not provide data of the survey after GGVN: a group of 25 students from Da Nang. Table 1 contains an overview of the different groups in the data set.

The survey data were provided per group by the GGVN project team in excel. SPSS was used to perform the statistical tests: a value of $p < 0.05$ was used to determine statistical significance.

Some of the indices of the data were not normally distributed. Non-normality was probably caused by the low amount of responses, especially in the post-project survey. Therefore non-parametric tests were used for the analysis. The analysis of the difference between certain categories of actions was done with the Kruskal Wallis H test to compare means. For the analysis of the difference between before and after GGVN the Wilcoxon signed rank test was used.

The 26 monitor reports (documents available upon request) were used to qualitatively verify and explain the quantitative data.

2.4.2 BEFORE GETGREEN VIETNAM

The survey before GGVN shows which actions participants reported to perform before the

trainings. It presents the amount of yes-, no-, intention and not applicable-answers for each of the 90 sustainable actions.

All actions

For an average action before GGVN, almost two third of the participants reported to do this (64%), 14% of the participants reported not to do an action, 15% reported to intended to do an action, and 7% said an action was not applicable to them (Fig. 20).
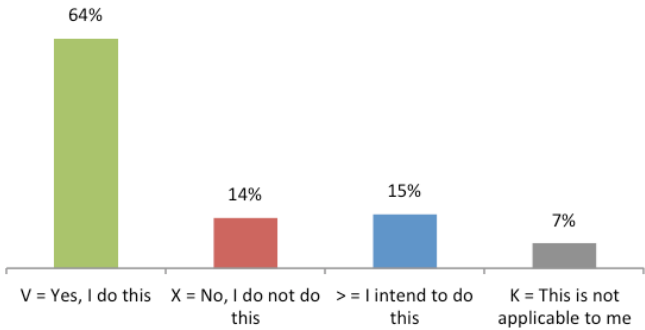

Figure 20. Average response rate per action, before GGVN.

4.2.2. The 9 clusters of context

The GGVN project divided the 90 actions into 9 contextual clusters. On average, the actions in the cluster 'Bathroom of the Future' received the highest amount of yes-answers per action and 'Towards a Green Office' the lowest. The average amount of yes-answers per action in each context cluster can be found in Fig. 21.

No significant difference was found for the no-, intention, and not applicable-answers.

The difference for the amount of yes-answers between the context clusters was found to be significant by the Kruskal Wallis H test: χ^2 (8) = 16.13, p = 0.041. A post-hoc pairwise comparison revealed that the amount of yes-answers per cluster differed significantly for the cluster 'Towards a Green Office' and 4 other clusters ('Bathroom of the Future', 'Home Recycling Station', 'On the Road Again' and 'Around the Supermarket') and for 'Bathroom of the Future' compared to the clusters 'Energy Efficiency' and '3R at the Office'.

No significant difference was found between the groups from Ha Noi, HCMC, Can Tho or Da Nang (the four participating cities). Between the student and office groups a significant difference was found. Analysis showed that student groups gave more intention-answers than office and community groups; this shows clearly in Fig. 22.

A Kruskal Wallis H test showed that the intention-answers were not equally distributed among the students, office and community groups: χ^2 (2) = 10.13, p = 0.006. A post-hoc pairwise comparison showed that the student groups gave more intention-answers than both the community and the office groups. The amounts of intention-answers of the community and office groups were not significantly different.

Buying, using and disposing actions

The 90 actions were also clustered into three types of action: buying (N = 30), using (N = 43) and disposal (N = 17) actions. The analysis showed that before participating in GGVN, participants said to intend to do more buying actions than using and disposal actions.

The difference for the amount of intention-answers between the buying, using and disposal actions was found to be significant by the Kruskal Wallis H test: χ^2 (2) = 6.85, p = 0.033. A post-hoc pairwise comparison revealed that the amount of intention-answers for the buying actions was significantly higher than for the using and disposal actions (Fig. 23). There was no significant difference between the using and disposal actions.

The top 10 for 'Yes', 'No' and 'Intention'

The 10 actions, for which most participants answered 'yes', were mostly about preventing unnecessary energy use or not wasting energy, especially during cooking activities. For example 'using the lid of the pan' or 'letting food cool down before putting it in the fridge'. The three other activities were about not throwing trash on the streets and taking care of your well-being (Fig. 24).

The 10 actions, for which most participants answered 'no', are quite diverse (Fig. 25). Three unpopular actions involved using second hand, leased or borrowed products. Composting
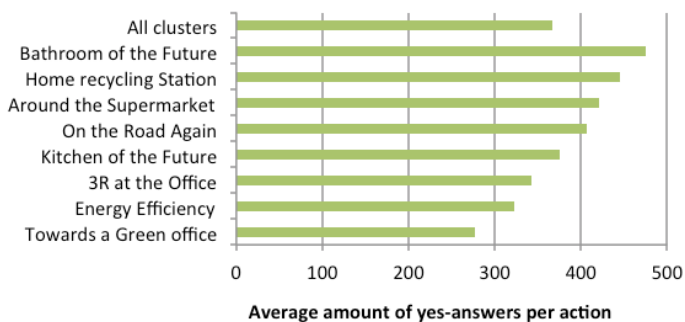
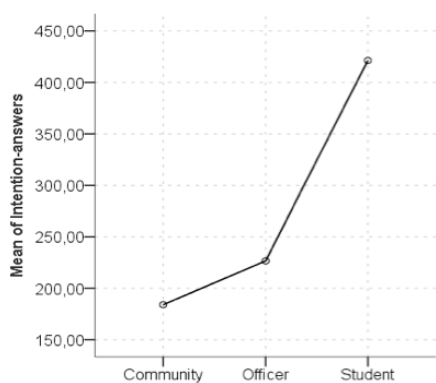Figure 21. Average amount of yes-answers (V) per action, per cluster, before GGVN.

Figure 22. The average amount of intention-answers per type of group, before GGVN.
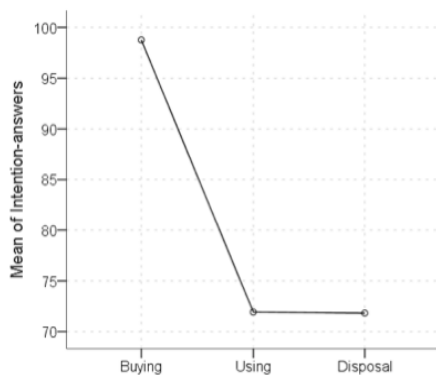

Figure 23. The mean of the amount of intention-answers per buying, using and disposal.

and the use of rainwater were not popular either. Other relatively unpopular activities were related to the office context. However, this is probably because not all participants worked in an office. Overall, these actions correspond highly to the actions that received a low amount of yes-answers or a high amount of not applicable-answers; the top 3 is exactly the same.

The 10 actions, for which most participants answered 'intending to do so', clearly fall into two groups. The first group consists of actions that involve buying special products and the second group of actions that tell you to include others (Fig. 26).

2.4.3   AFTER GGVN

After GGVN one extra answer was possible: 'I do this more' (>). The groups answered only for the actions in the two context clusters that they had been trained on. The total amount of answers per action was thus not the same. Actions in clusters that were selected by fewer groups also received less answers and vice versa. Calculations are therefore not based on the total amount of answers per action but on percentages of answers per action.

No group selected the cluster 'Bathroom of the Future' (5 actions) and the introduction actions (2 actions) were not part of any cluster. Therefore, the total amount of actions in the analysis of the survey after GGVN was 83 and not 90.

All actions

After the trainings of GGVN, the percentage of participants saying 'yes' (or 'more') for an average action increased to 80% (51% and 29%). Compared to 64% of yes-answers per average action before GGVN, this is an increase of 16% (Fig. 27).

A Wilcoxon signed-rank test (Table 12) showed that after GGVN the percentage of yes-answers combined with more answers increased from 64% to 80% for an average action ($Z = 7.29$, $p = 0.000$).

The 9 clusters

After GGVN, the 8 context clusters did not differ significantly from each other in the percentages of yes-answers (nor did they for the other answers).
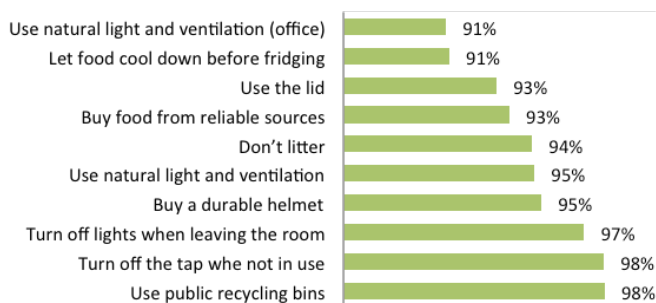
Figure 24. Top 10 actions participants said they were doing already, before GGVN.

Use natural light and ventilation (office)	91%
Let food cool down before fridging	91%
Use the lid	93%
Buy food from reliable sources	93%
Don't litter	94%
Use natural light and ventilation	95%
Buy a durable helmet	95%
Turn off lights when leaving the room	97%
Turn off the tap whe not in use	98%
Use public recycling bins	98%
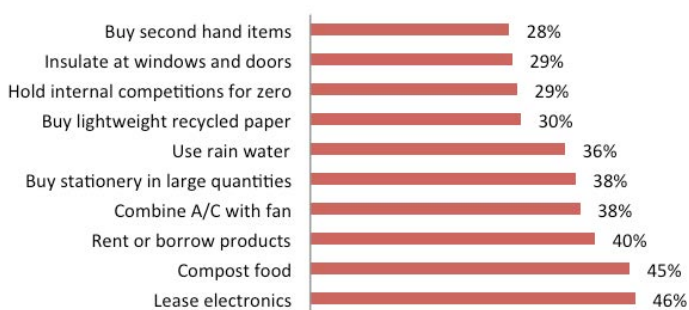
Figure 25. The 10 actions of which most participants said not to do, before GGVN.

Buy second hand items	28%
Insulate at windows and doors	29%
Hold internal competitions for zero	29%
Buy lightweight recycled paper	30%
Use rain water	36%
Buy stationery in large quantities	38%
Combine A/C with fan	38%
Rent or borrow products	40%
Compost food	45%
Lease electronics	46%
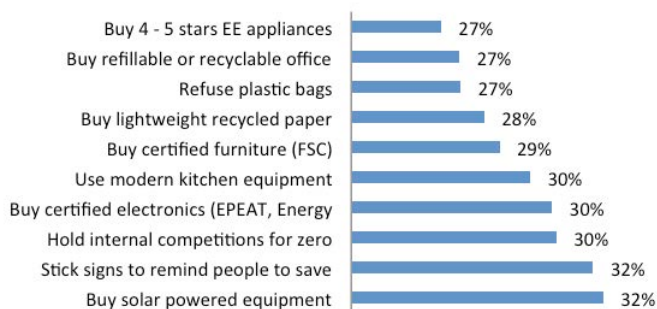
Figure 26. The 10 actions of highest intention, before GGVN.

Buy 4 - 5 stars EE appliances	27%
Buy refillable or recyclable office	27%
Refuse plastic bags	27%
Buy lightweight recycled paper	28%
Buy certified furniture (FSC)	29%
Use modern kitchen equipment	30%
Buy certified electronics (EPEAT, Energy	30%
Hold internal competitions for zero	30%
Stick signs to remind people to save	32%
Buy solar powered equipment	32%

However, it is clear that the two most popular clusters were 'Energy Efficiency' and 'Around the Supermarket'; respectively 13 and 14 of the 26 groups selected these clusters (see Fig. 28 xx). The answers for the individual actions within these clusters can be found in appendix B. The two least popular clusters were 'Bathroom of the Future' and 'Towards a Green office'. The other 5 clusters were selected by 3-6 of the groups.

Buying, using and disposing actions

After GGVN, the buying actions received on average a lower percentage of yes-answers than the disposal actions. The buying actions, again as before, received on average a higher percentage of intention-answers than the using actions.

A Kruskal Wallis H test was performed to compare the mean ranks of the percentages of yes-answers for buying, using and disposal actions. The test showed that the distribution of percentages of yes-answers of the buying, using or disposal actions was not the same: χ^2 (2) = 7.41, p = 0.025. A post-hoc pairwise comparison revealed that the percentages of yes-answers after GGVN were only significantly lower for the buying actions in comparison to the disposal actions: χ^2 (1) = 19.51 p = 0.033.

A second Kruskal Wallis H test was performed to compare the mean ranks of the percentages of intention-answers for buying, using and disposal actions. The test showed that the distribution of percentages of intention-answers of the buying, using or disposal actions was not the same: χ^2 (2) = 7.41, p = 0.021. A post-hoc pairwise comparison revealed that the percentages of intention-answers after GGVN were only significantly higher for the buying actions compared to the using actions: χ^2 (1) = 1.59, p = 0.030.

Top 10 increase and decrease in yes-answers

The 10 actions for which the difference in yes-answers before and after GGVN was the highest are shown in Fig. 29. Two types of actions were identified: buying certified products and re-using products. In general, the buying actions received less yes-answers before GGVN, which left more room for improvement. Two other actions that changed a lot were single occasion actions: 'defrosting the fridge' and 'sticking signs to remind people to save'. A first explanation could be that before GGVN participants did not execute these infrequent actions
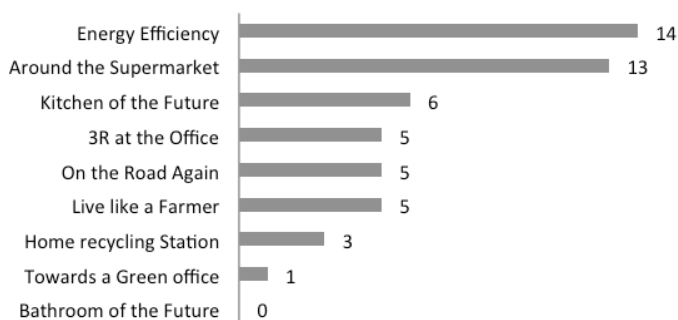
Figure 27. Clusters selected by number of groups.
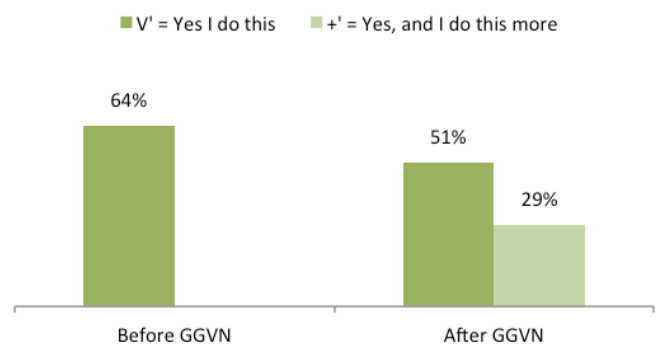
Figure 28. The Average amount of yes-answers (V and > (more)) per action, before and after GGVN.

Wilcoxon signed-rank test		Before	After	Z	N	Sign.
Pair 1 V	Yes- & more-answers before & after	63.5%	79.6%	−7.29	83	,000
Pair 2 X	No-answers before & after	14.4%	4.6%	7.60	83	,000
Pair 3 >	Intention-answers before & after	14.7%	10.8%	4.37	83	,000
Pair 4 K	Not applicable-answers before & after	7.5%	5.1%	4.43	83	,000

Table 12. Results from the Wilcoxon signed-rank test on the 4 answers before and after GGVN

but during GGVN they did. Many participants changed their response on composting food but it remained an action that scored below average after GGVN.

The post-project survey showed 10 actions with zero or negative change of yes-answers (Fig. 30). Two types were identified: actions that need specific (product) knowledge and actions that involve the disposal of old products. These negative changes can be explained in several ways. First, some terms and actions were ambiguous or not clear affecting participants ability to fill in the survey. For example, participants did not know exactly what qualified as a 'sustainable motorbike' or 'energy saving' light bulbs. These were found to be the only ambiguous actions. Another reason that can explain negative change is that participants became more aware of their actions throughout the program; when they started to pay attention to an action they realized they did not do it as much, such as 'turning off lights when leaving the room'. Or, participants became stricter with their interpretations of certain words and actions such as 'buying food from reliable sources'. However, ceiling effects could also have played a role because the majority of these actions had a high response rate before GGVN. The elaborate action of 'holding international competitions' was an outsider with few participants answering yes before and after.

2.4.4   THE INTENTION EFFECT

The 10 actions that, before GGVN, received the highest rate of intention-answers were also singled out after GGVN. The actions mostly involved buying specific type of products. The action 'refusing plastic bags' was not answered for after GGVN. The data were not sufficient to report on a significant change between before and after. However, Fig. 31 shows that 5 actions with a high rate of intention-answers before, received a high rate of yes-answers after. Thus participants said that throughout the GGVN trainings their high intentions were turned into action.

However, for the other 4 actions, little or no change was shown in the yes-answers after, the high rate of intention-answers remained. These four actions were all infrequent investments, such as purchasing solar power or modern kitchen equipment. GGVN did not manage to establish a substantial change for these actions.
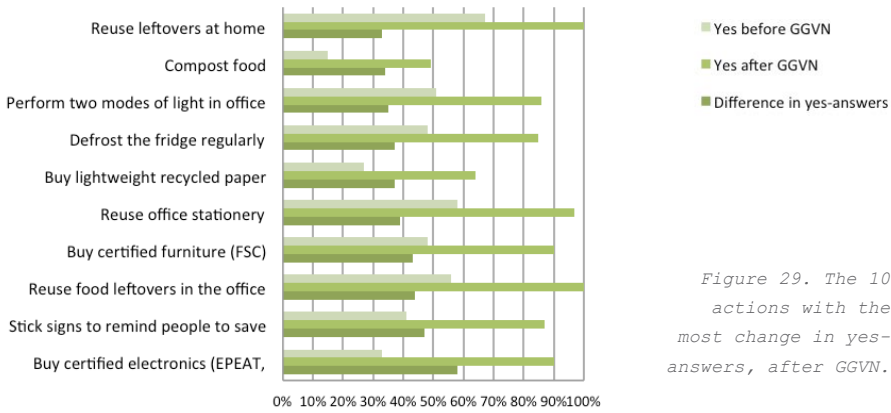
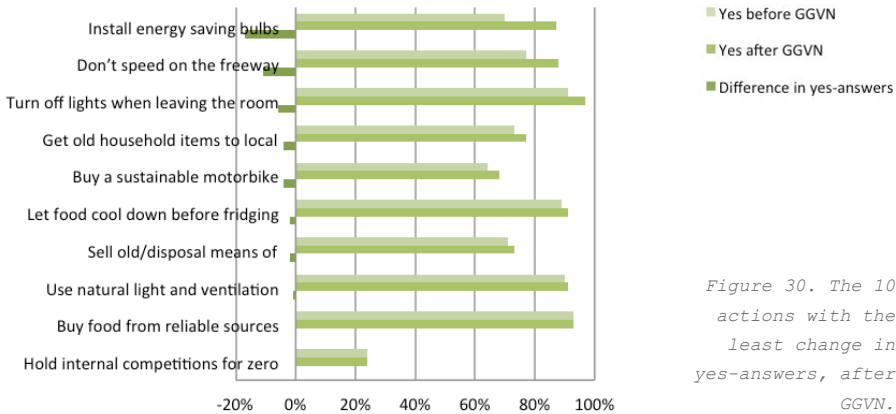*Figure 29. The 10 actions with the most change in yes-answers, after GGVN.*

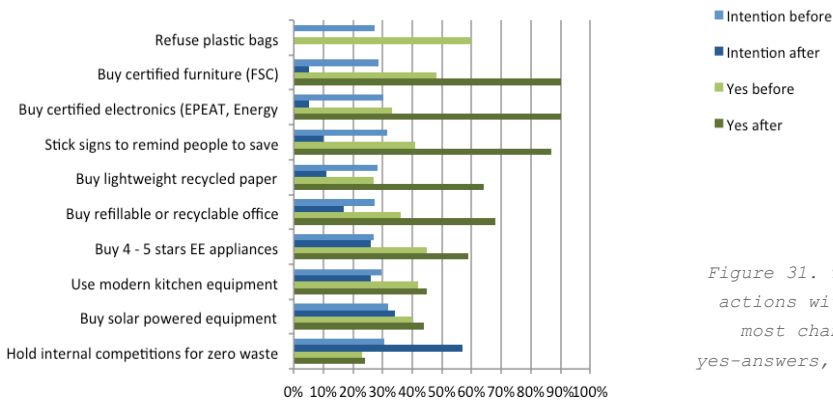*Figure 30. The 10 actions with the least change in yes-answers, after GGVN.*

Figure 31. The 10 actions with the most change in yes-answers, after GGVN.

2.4.5   THE MONITOR REPORTS

Before GGVN

The monitor reports confirmed that participants had indeed applied many of the actions before GGVN. The two main reasons participants gave for joining GGVN were to know how to be healthier and save money; they expected to gain more practical tips on these two issues. Other participants joined because they were worried about pollution of their existing habitat, and wanted to improve the environment. One of the monitors reported: "Participants really want to change themselves to protect our environment, to be healthy and to save money and energy for their family, their company and our country. Moreover, they also want their family members and friends to live greener". Two additional motives for joining GGVN were networking and professional development. Participants said that "meeting, and sharing with others offers a good chance to learn about 'green living' and discuss important issues". Some also held becoming one of the first 1000 Change Agents and receiving an international certificate in high regard.

After GGVN

From the survey data an increase of action was seen, the monitor reports confirmed this. Participants reported that after GGVN they understood and applied more actions. Next to that, the monitors reported that after the field trips, the number of participants completing the actions usually increased more than after information meetings. Many tips were known before GGVN but practical implementation in participants' daily lives was missing. After GGVN one monitor wrote for example: "Regarding the fridge FIFO (First In First Out) tip, before joining the group, she divided food into many small packages and memorised the expiry date but she usually forgot it. Now, after joining GGVN, she makes a label to remember the expiry date".

The monitor reports also showed that participants not only applied more actions after GGVN, but also felt more confident: "At the last meeting, about 3e4 participants shared that they had applied many tips before joining the project. The project made them feel more confident and motivated to apply sustainable actions because they feel they are not alone."

Popular topics: energy and the supermarket

Most groups selected the clusters 'Energy Efficiency' and 'Around the Supermarket'. These align well with the motivations for joining GGVN: saving money and being healthy. In the 'Energy Efficiency' cluster, actions to limit the use of electricity were popular before and after GGVN because it saves money. However, buying certain energy saving devices was less popular. Participants said this was because of external factors such as the lack of information, the lack of availability and the (perceived) high price. The supermarket was a topic of interest because of the relation to food and health. Before GGVN many participants applied the actions in this cluster and after GGVN even more participants did. There was one exception: buying discounted fresh food. Participants said they did not like this action because they belief freshness is the most important characteristic of good food. The reduction of plastic bags is related to this belief because participants have the habit of using plastic bags to keep food fresh. The topic was often discussed and mentioned in almost all monitor reports: "He feels it is comfortable to buy and store food with plastic bags as sometimes he forgets to bring an environmentally-friendly bag. The vendors are willing to give him plastic bags free of charge". Or: "It is hard to keep the commitment of using just 2 plastic bags a day, especially because I am a noodle seller. I have to use at least 2 kg of plastic a day". This was the one action on which the survey data and the monitor reports clearly differed. The survey before GGVN showed that many participants (75%) said they only used 2 plastic bags a day. In the monitor reports it was seen though that even after GGVN, many participants still find it hard to use only 2 plastic bags a day.

The cluster 'Bathroom of the future' stood out positively from the survey before GGVN. More than for other clusters, participants reported to perform the actions already. The monitor reports also showed various stories of participants that were very careful about their water use. Often these were older participants that had this habit due to water scarcity in the past.

The groups

The monitor reports of the student groups showed strong motivations for sustainable consumption. Also,more often than the other groups, they included altruistic motivations: "to make a better future for Vietnam". Some participants in the office colleagues groups and

community groups had slightly less idealistic motives to join the GGVN program: some were assigned to participate by their bosses and some others joined for the gifts they would get (a re-usable bag, snacks and drinks). Actions that students still did not apply after GGVN were mostly those that they were not able to control (yet). This corresponds to the higher amount of intention-answers that was found from the survey data. For example, many students were not allowed to cook in their dorms and eat most of their meals in the canteen. This made them not able to control the cooking or ingredient choice as much as others could.

Barriers for change

After GGVN, some barriers remained. Rental or second-hand products continued to be unpopular. Participants said they did not know of any places that offered these products but also that they preferred new products. Participants also reported that the high price of environment friendly products continued to be a high barrier. However, after having received information during GGVN, participants were more convinced about the benefits of these products. Participants also complained that not enough information is provided to distinguish between sustainable and unsustainable products. On top of that, the information sources were not always trusted and participants did not know how to judge the available information. Organic food products were mentioned a lot in this category: "It is difficult to find real organic food".

External factors were also mentioned as barriers, especially for the actions within the cluster 'On the road again'. Participants complained about the quality and regularity of public transport, about the absence of bike paths or the lack of safety in traffic: "The traffic is not suitable to apply the action of 'turning off the engine at the red light'. It is better to keep the engine running to be able to avoid the other drivers, the bus and crazy vehicles."

Two other factors also played an important role in the behavioural change process: the ease of applying an action and the time required to perform it. Participants said that easily applicable actions increased their overall motivation. Actions that participants considered easy to change were for example 'reusing leftovers', 'using the stairs instead of the elevator', 'using your own cup', 'saving paper tissue' or 'using public recycling bins'.

The social aspects

Another finding from the monitor reports was that many participants passed on information and encouraged others to change: "Most of the group participants are vendors, they have a lot of relationships and are proud of talking about what they have learnt from GGVN" or "Mr Cường shared the message of reducing plastic to his wife" or "Mrs Mai usually talks with her customers on what she has learnt". Also, a community member made re-usable shopping bags for everyone in her group; someone else started a 'grow-you-own-vegetables-course' for her neighbourhood and others came up with additional actions to be added to the list of 90 and shared these with their groups.

In contrast to that is the resistance some participants experienced from their surroundings. During GGVN, some participants were ridiculed for their actions by their spouses or children, for example for "collecting old jars and old bottles to reuse again as flower vases". Also, a complaint from the office colleague groups was that their other colleagues did not support them. Some wanted to reduce electricity use by installing energy saving light bulbs or using the air-conditioning less. However, their colleagues preferred to "use strong light and air-condition the whole day".

Nevertheless, GGVN made that participants did not feel alone, which strengthened their confidence. Participants tried not to be bothered by the ridicule from others: "Mr. Đúc, who used to be ashamed to bring a bowl to buy food or a cloth bag to the market, has now changed his habit although he knows some people will stare at him" or "Ms. Tiện, she is using a bike confidently and confirmed that she will keep using her bike to go to school or hang out, in spite of her friends' teasing."

2.5   DISCUSSION

The main objective of this study was to identify sustainable behaviour that followed or did not follow from an intervention among Vietnamese consumers. These formed the basis to develop initial directions for sustainable consumption strategies.

2.5.1   LIMITATIONS

There were two limitations to the method used. First, a self-reported survey captures only what participants say and not what they actually do. However, this limitation was partially compensated by the monitor reports since these included house visits and observations. Differences between the survey and monitor reports were only found for one action: the use of plastic bags. The survey showed that many participants claim to only use 2 plastic bags a day. But, in almost all monitor reports it was mentioned that participants still have trouble to minimize the use of plastic bags.

Second, as a result of the two different methods used (individual surveys before GGVN and group discussion after GGVN), only tentative conclusions can be drawn regarding behaviour change before and after the intervention. The Vietnamese project team chose to use a group procedure with the intention to share mutually achieved results and to strengthen the groups' motivations to continue. Another limitation was that the post-project survey was only conducted for the actions within two contextual clusters, and not all nine. Monitor reports are used to strengthen the conclusions regarding the change between before and after and to mitigate the limitations of the research method.

The actions were quite well adapted to the Vietnamese participants. Before GGVN, participants reported that only 6.6% of the actions were not applicable to their daily practice. The selection of highly motivated participants contributed to this. This could also explain why some actions showed little or even negative change after GGVN (ceiling effect). However, there were also actions left blank, especially in the office context clusters. On average 9.5% of the participants did not answer for the actions in these clusters, mostly because they did not work in an office, compared to 5.4% in the other clusters. The office clusters also received the lowest percentages of yes-answers. If actions left blank were treated as not applicable-answers (now it was not), the reported percentages of yes-answers in these office clusters would have been even lower.

2.5.2   THE EFFECT OF GGVN

The survey showed that the program achieved significant positive overall change; performed actions increased from 64% to 80%. The selection of highly motivated participants, activity

based group trainings and some existing sustainable habits, showed to be a good mix for change through the GGVN training program. Similar studies, e.g. on Eco-Teams, also suggest that: "change can be predicted from the interplay between behavioural intention and habitual performance before participation, and the degree of social influence experienced during participation" (Staats *et al.*, 2004, p.341). However, this successful but complex intervention should be further decomposed in the future to find out what elements exactly cause the package to be effective.

Participants with a quite high level of sustainable behaviour were selected; this made change through GGVN likely. When lower level participants would have been selected change would have been less likely but room for improvement even larger. Participants reported that certain actions were already habitual as a money saving strategy (e.g. sparse electricity use or food leftovers re-use) or due to past scarcity (e.g. sparse water use). Using Lewin's (1951) metaphor, this shows that not all old habits are 'unfrozen' yet. Participants reported that the GGVN trainings provided motivation to keep these sustainable habits rooted in their daily rituals and to not discard them due to increased prosperity.

The monitor reports revealed two effects of GGVN that the survey did not, proving the value of triangulation of quantitative and qualitative data. They uncovered the positive effect of the field trip meetings compared to the informational meetings and the positive (and negative) effects of social dynamics. Participants reported feeling powerful effects of social pressure and social relief in the project: the 'feeling of not being alone' was an important aspect of the projects' success.

No difference between the four cities was found in this study.

2.5.3   A HIGH INTENTION-ACTION GAP FOR BUYING SUSTAINABLE PRODUCTS

Buying actions showed the highest intention-action gap. For buying actions, compared to the using and disposal actions, less yes-answers were given after GGVN but more intention-answers both before and after GGVN. Referring back to the MOA model, the relatively high intention (Motivation) to buy sustainable products was moderated by (perceived) availability

(Opportunity) and certain habits and knowledge (Ability). The monitor reports showed that indeed high costs of sustainable products were often mentioned as a barrier for action, as well as the lack of information and lack of offering.

Participants said they needed more information to choose the right products, especially for green electronics and sustainable food products. This corresponds with the value-oriented characteristics of the Vietnamese consumers who balance quality of product characteristics against price (KPMG, 2012; Speece & Nair, 2000; TNS, 2011; Vu *et al.*, 2007). Matthaes (2011) also found that many Vietnamese consumers browse online for brands and their products and are the most open of all Asian consumers to receiving brand information. This openness towards brands provides an opportunity for producers to interact with their consumers; especially for Vietnamese producers, because they understand the Vietnamese consumer best. However, Vietnamese producers are more and more focused on international markets instead of local markets (Maruyama & Trung, 2007; Beresford & McFarlane, 2007).

Although participants were eager for more green information, they also reported that they do not always trust green certificates or claims made on the labels of products. Shortcomings of labelling schemes are also found in Europe (Dendler, 2014); there, selecting between the abundance of green offerings is a challenge. In Vietnam, the lack of trust in local green labels is possibly due to a general perception of local brands being inferior (TNS, 2011; Speece & Nair, 2000) in combination with the government's decreasing authority on consumers (Fforde, 2013).

2.5.4   ENERGY, FOOD AND THE NEW GENERATION

Participant interest was high in the actions of the clusters 'Energy Efficiency' and 'Around the Supermarket'. Participants also reported that food, personal health, saving energy and saving money were motivating reasons for sustainable consumption. These more egocentric motivations are comparable to findings in other countries. For example, Zhao *et al.* (2014) found that urban residents of China engage in green consumer behaviour for personal (e.g. economic) reasons rather than collective (environmental) reasons. Nevertheless, the monitor reports showed that students had more altruistic motives for joining GGVN.

The survey also demonstrated that students reported more sustainable intentions than the other groups. Although the literature on the intention-action gap shows that this does not necessarily mean intentions will turn into future action, it is promising. Even more so, because Vietnam has a very young population: 56% of the population is below 30, and the average age in Vietnam is just 25 years (GSO, 2012).

2.6 CONCLUSIONS

64% of participants self-reported to be engaged in a sustainable action before GGVN and this percentage increased to 80% after GGVN. This is a positive sign for the future of sustainable consumption in Vietnam. Especially personal health and saving money were reported to motivate participation in GGVN. In the trainings, energy and food were the most popular topics. Therefore, to embed sustainable consumption in the future lives of the Vietnamese middle class, food and health or energy and saving money seem to be powerful drivers.

Many participants reported the intention to buy sustainable products but fewer participants took action to do so. In order to turn purchase intentions into future actions, participants reported wanting more information and more product offerings. Local sustainable producers and service providers should engage with consumers to provide this information and to gain their trust.

Young and idealistic students are a key group to target because they reported high intentions and altruistic motives regarding sustainable consumption. Role models will be important for the future of sustainable consumption in Vietnam because socializing these actions can overcome participants' fear of ridicule. Along the same lines, the social aspect of the group environment and activity based meetings of GGVN were of crucial importance of the success of the intervention. The feeling of not being alone and instead acting together strengthened participants' will to continue and thus could contribute to lasting change in the future.

In conclusion, a powerful strategy toward more sustainable consumption in Vietnam can be to create more group-based activities around the themes of energy and shopping for food. A

twofold approach is needed that both installs new sustainable consumption patterns and keeps old habits rooted in daily rituals. Role models should set an example for the young population and consumers and producers must be better connected to increase trust and transparency.

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APPENDIX A

The sustainable action survey, see page 167 xx.

Sustainable actions survey

Tick the box in front of the behaviour change

- ⊃ = I do this
- ✗ = I don't do this
- ⌃ = I intend to do this
- | = This doesn't apply to me

General Information

Name
Age _____ years
Hometown
Highest education
Current occupation
Marital status
Household type
Household size _____ people
Household income _____ VND/month

Introduction

- Refuse plastic bags
- Don't litter

Live Like a Farmer in the City

- Eat organic food
- Reuse leftovers
- Use rain water
- Use natural cleaning agents

Bathroom of the Future

- Take short showers
- Use a water saving shower head
- Turn off the tap whe not in use
- Use natural cleaning agents
- Use cloth tissues

Kitchen of the Future

- Position fridge 10cm from the wall
- Set fridge at 7C and freezer at -18C
- Defrost the fridge regularly
- Store food according to directions on label
- Load your fridge up between 70 and 80%
- Apply First In First Out
- Plan cooking in detail
- Defrost food before cooking
- Let food cool down before fridging
- Use modern kitchen equipment
- Use the lid
- Prioritize using a microwave
- Compost food
- Monitor what you throw away

Energy Efficiency

- Limit using electricity at high peak time
- Unplug devices
- Combine A/C with fan
- Put A/C at 26C
- Use natural light and ventilation
- Have green plants in your house
- Turn off lights when leaving the room
- Clean bulbs frequently
- Install energy saving bulbs
- Insulate at windows and doors
- Maintain big electronic devices
- Rent or borrow products
- Buy second hand items
- Buy 4 - 5 stars EE appliances
- Buy solar powered equipment

Home Recycling Station

- Don't burn waste
- Use a recycling station
- Monitor what you throw away
- Reuse packaging
- Get old household items to local charities

Towards a Green Office

- Reuse food leftovers
- Use natural light and ventilation
- Perform two modes of light in office
- Use A/C and fans
- Use energy saving modes
- Maintain big electronic devices
- Buy furniture made from environmental friendly materials
- Buy certified furniture (FSC)
- Lease electronics
- Buy certified electronics (EPEAT, Energy Star)
- Hold internal competitions for zero waste

3R at the Office/School

- Use stairs instead of the elevator
- Use your own cup for coffee/tea
- Give priority in buying local stationery
- Buy stationery in large quantities
- Buy lightweight recycled paper
- Buy refillable or recyclable office stationery
- Print two-sided
- Collect old paper
- Save paper tissue
- Stick signs to remind people to save electricity
- Use public recycling bins
- Collect and share recyclable office supplies
- Reuse office stationery
- Monitor what you throw away

In and Around the Supermarket

- Make a shopping list
- Buy diverse food
- Buy food in season
- Prioritize to buy local food
- Buy food from reliable sources
- Prioritize environmental friendly packaging
- Buy discounted fresh food

On the Road Again

- Turn off your engine while idling
- Maintain your motorbike
- Buy a durable helmet
- Keep speed constant
- Don't speed on the freeway
- Accelerate and brake smoothly
- Avoid traffic jams
- Share your motorbike
- Buy a sustainable motorbike
- Use public transportation
- Use a bicycle
- Use a car
- Set odd/step/equal means of transportation
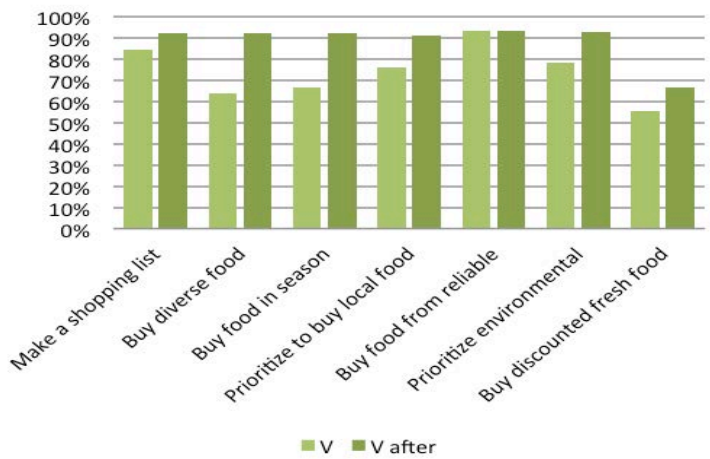
APPENDIX B

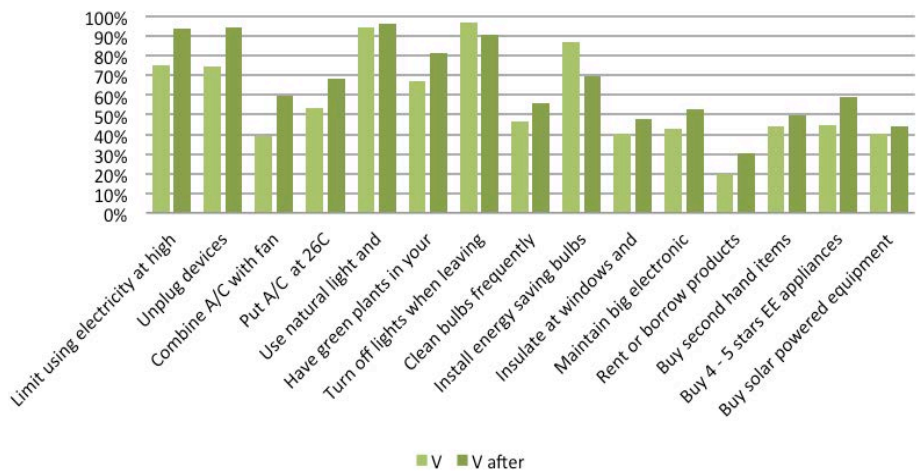*Figure 32. Yes-answers for the 'Around the Supermarket' cluster.*

Figure 33. Yes-answers for the 'Energy Efficiency' cluster.

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Interlude II: Local food versus Western food

A story of McDonalds, Starbucks and Burger King in Vietnam

Consumers in Vietnam tend to highly value Western brands (TNS, 2012) and regard local brands as inferior in quality. However, in this research it was found that for food it is a little more complicated than that.

This interlude is included because it is an interesting side-track in the findings that reflects on the struggle between Western ideals and Asian heritage related to food choices. The text is based on the findings of the different studies; on the personal experience of the researcher while living in Vietnam for 1,5 years; and on articles from online Vietnamese news sites.

Changing fast

In the first months of this research, the beginning of 2012 there were no McDonalds, Burger Kings or Starbucks in Vietnam. The (still communist) government managed for a long time to keep out these international food chains that are maybe the embodiment of capitalistic consumerism, such as McDonalds and Starbucks. But, in February 2013, the first Starbucks opened its doors in Ho Chi Minh City (HCMC). Now, Western food is finding its way into the Vietnamese bellies and (fast food) chains have been popping up with a frightening rapid speed.

Starbucks

HCMC is the city in the South formerly known as Saigon. People in the South still use the name Saigon, they never really got used to the name Ho Chi Minh City that was given by the victorious North Vietnamese after the war. The population of Saigon is known to be more open to new (Western) products and brands and especially to American products and brands (also a legacy of the war period). Therefore it was not surprising that Starbucks choose this city to open up their first store in Vietnam. And when the first store opened, the sales exceeded expectations.

Now, in 2016, there are 18 Starbucks in Vietnam: 14 in HCMC, and 4 in Hanoi, the capital city where the (communist) Government resides. And, other Asian Emerging countries are following: in 2016 a first Starbucks opened up in India.

McDonalds and the son of the prime minister

A year after the first Starbucks opened; the first McDonalds of Vietnam also opened its doors in HCMC in 2014. Interestingly the right to open the first McDonalds was given to the Prime minister's son in law. Now, in 2016, there are 9 McDonalds in Vietnam, all in HCMC. An interesting detail is also that on the website of McDonalds Vietnam one of the menu items in the main menu item 'about' is Food Safety. There you can find a list of how many times employees wash their hands (every hour), or how many times the kitchen is cleaned (once every 4 hours) or how tables are cleaned (with clean and sterilized towels).

The prime ministers' son in law told Vietnam Net (December 15, 2014) that with McDonalds he aimed at "creating a "magical" experience and a weekend destination for Vietnamese

*Figure 34.   Opening of McDonalds Ho Chi Minh City. Published online on
Vietnam Investment Review, February 10, 2014.*

*Figure 35. Opening of the first Starbucks in Vietnam. Picture published online
on Vietnam Breaking News, March 12, 2013.*

*Figure 36. People enjoying coffee, tea and cigarettes on the streets of
Hanoi.*

families, which would jibe with corporate strategy elsewhere".

Burger King, short lasting success

When the first Burger King opened at the airport of Da Nang in central Vietnam, some said that people booked a flight there specifically to try a burger at Burgher King. However, Burger King is also one of the examples that the popularity does not always last long. In February 2016, some local news sites reported that Burger king might reject from Vietnam all together. Although Burger King rejects these rumours. In 2012, when Burger King opened their first location in Vietnam, the expectations were to open 60 stores around the country in five years, but it currently only has 13 stores, after closing some locations in 2015 and 2016.

The reason for the short lasting success might be that people tend to come to these food chains for the newness of it, but do not return for the food. People come for the experience and ambiance of a Western lifestyle of luxury. For example in an article of the Wall Street Journal (by James Hookway, May 17, 2013) the arrival of the first Starbucks was evaluated by some early customersm they said they were "more interested in sampling the ambience of the store than the taste of Starbucks' coffees." In another article on Vietnam Net (December 15, 2014) Linh, who was a loyal customer of Starbucks during her years overseas, said she was disappointed with the taste of Starbucks in her home country Vietnam. She also said "most consumers go to Starbucks for the nice view rather than to enjoy good coffee, young Vietnamese can be obsessed with something new, but after a very short time, people will get saturated and it will be replaced by something new". Linh adds to this: "if I live abroad, I will remain loyal to Starbucks, but in Vietnam, why should I have to pay three times more for a cup of Starbuck coffee while its quality is not as good as the local one?".

Appreciation of local food

Although the newness, exclusivity and status that a Western product brings, local food is highly appreciated by the Vietnamese consumers. In the interviews and workshops in the studies the word traditional often resembled sustainability and natural as well as healthy. These four words seemed to be much connected, not completely separated and powerful in getting a positive message abroad according to the customers and companies in the studies. Everywhere in Vietnam, people are proud of their local dish. If you arrive in a town as a tourist everyone asks

you whether you have tried their local dish already. In the north people will ask you about the famous breakfast noodle soup Phở or the rice vermicelli's with grilled pork Bún chả. In central Vietnam people will ask you weather you tried Mì Quảng already and if you maybe also think it is the best dish of the country (actually expecting you to answer that it the best dish in the world). In the south similar encounters can be sketched. Overall, Vietnamese people are very proud of their local recipes and traditions. This makes that local ingredients for local recipes are always preferred. Therefore nationalism and also regionalism play a role when it comes to choosing ingredients for their precious Vietnamese dishes.

In the company studies it was also seen that some companies tried to appeal to this national pride. But, it could be used even more to promote specific products and sustainable lifestyles in general. Some of the companies also used a combination of Western style to appeal to young customers and local ingredients to appeal to the national pride. This proved to work well for them, showed by the high appreciation of the product by the new young customers during the workshop.

3. Mental Innovation Space of Vietnamese agro-food firms

ABSTRACT

Purpose – Vietnamese agro-food firms are often small and have short value chains. They are facing increasing competition from multinationals to serve the consumers of the rising middle class. It is assumed that co-creation or open-innovation can be a competitive innovation strategy for the Vietnamese firms. Therefore, the purpose of this paper is to understand whether the agro-food firms have the "mental space" or an according mindset to innovate with their customers.

Design/methodology/approach – A three dimensional model of "mental innovation space" (MIS) was developed, comprising of the: focus of innovation, level of innovation and degree of collaboration. A total of 14 Vietnamese agro-food companies agreed to embark on a process of problem definition for innovation according to these three dimensions. This process creates a deeper understanding of the firms' fuzzy front end of innovation and results in less hypothetical findings, compared with traditional interviews.

Findings – The results show that the Vietnamese agro-food firms have a rather small MIS. They are inexperienced with innovation in new product development and are even more unfamiliar with co-creation. However, the firms recognise the need for innovation and are enthusiastic about the use of co-creation. The applications of co-creation firms foresee are close to the market, motivated by meeting customer demand and keeping up with competitors.

Originality/value – The characteristics and willingness of the Vietnamese agro-food firms make that it is believed an open atmosphere can be created. Then, co-creation can foster innovation in order to strengthen their competitive position.

3.1 INTRODUCTION

This paper presents insights into the "mental innovation space" (MIS) (operationalised later) of the Vietnamese agro-food firms and their readiness to include customers in the innovation process. The collaboration of employees and customers in innovation processes is often referred to as co-creation, open-innovation or co-design. In the West co-creation or open-innovation strategies are gaining ground, but in Vietnam this is unheard of. First, this study aims at investigating if and how agro-food firms currently involve their customers in their innovation process. Second, whether they have the "mental space" and according mindset to co-create with their customers.

Specifically, this study explores the direction and possibilities companies see prior to an open-innovation workshop with their customers. A problem definition process for open-innovation was executed with 14 agro-food firms. They were willing to analyse possibilities and define potential workshop outlines. In other words: they agreed to embark on the fuzzy front end of innovation. The fuzzy front end is defined by Joore and Brezet (2014, p. 4) as "the phase that describes the early stages of the innovation process where ideas form, be it often in an unstructured manner". Sanders and Simons (2009, p. 31) explains that the goal of the fuzzy front-end exploration is "to define the fundamental problems and opportunities and to determine what is to be, or should not be, designed and manufactured". Not problem solving but problem definition is the driver of this process (Sanders & Simons, 2009, p. 31).

Vietnamese agro-food firms are often small enterprises and have short value chains, similar to other developing or emerging economies (Caiazza & Volpe, 2012; Folke *et al.*, 2010). The short value chains make that a close relation between the consumer and producer can exist. Therefore, it is assumed that co-creation, with the strong tie and short value chains, can be a promising strategy for innovation.

The 14 companies went through processes of problem definition for open-innovation, which provided insight into the "MIS" of the Vietnamese agro-food firms and their willingness to open up their innovation process to their customers.

3.2   BACKGROUND

3.2.1   CO-CREATION, CO-DESIGN AND OPEN-INNOVATION

The very literal meaning of co-creation is: together (co) make or produce something (new) to exist (creation). Co-creation is often seen as part of a larger movement of open-innovation; basically opening up the process of innovation (Huizingh, 2011). A definition of open-innovation most often used is: "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and to expand the markets for external use of innovation, respectively" (Chesbrough *et al.*, 2006, p. 1).

Co-creation finds its origin in co-production where consumer participation was introduced in the supply chain. At first it was introduced to achieve cost minimisation (e.g. IKEA) but in John Czepiel (1990) introduced the idea that customer participation may lead to greater satisfaction. Now it is generally understood that co-creation can create benefits such as increased speed to market, reduced risk and increased customer loyalty (Auh *et al.*, 2007). Furthermore, it is believed that it can lead to greater satisfaction and commitment due to participation or co-operation (Bettencourt, 1997; Dong *et al.*, 2008; Hoyer *et al.*, 2010) and that the likelihood of positive word-of-mouth is higher with higher levels of customer participation (File *et al.*, 1992; Hoyer *et al.*, 2010).

Co-creation is often classified in five different types: personal offering, real-time self-service, mass-customization, co-design and community design. This shows co-design as a subordinate of co-creation but the terms are often tangled (Mattelmäki & Sleeswijk-Visser, 2011). In this study the focus has been on customer co-design specifically within the spectrum of co-creation and open-innovation. Sanders and Simons (2009, p. 1) define co-creation and co-design as follows:

> *The concept of co-design is directly related to co-creation. By co-design we refer to collective creativity as it is applied across the whole span of a design process. By these definitions, co-design is a specific instance of co-creation.*

3.2.2   MIS

This paper investigates the MIS of the local agro-food firms. We define MIS as "the firm's perception of boundaries and possibilities for innovation and collaboration in new product development". The unique aspect of this model is that it combines two more traditional innovation dimensions with the collaborative dimension of open-innovation. This combination follows the idea that companies innovate in a context as network-stakeholder-combinations. MIS is not identical to an innovation mindset; the word "space" is used deliberately. A mindset is "an established set of attitudes" (Oxford English Dictionary, 2002). MIS however, is used to indicate a dynamic set of attitudes towards innovation but also the way this is applied to the innovation process and how broad this is seen. We operationalised MIS by three dimensions: the focus of innovation, the level of innovation and the level of collaboration (Fig. 37).

The first dimension, the focus of innovation, identifies how many parts of their business companies would want to open up to which stage of innovation. In other words, if companies only want to focus on few parts of their business close to the market or if companies would be willing to look for innovations in all parts of their business also further away from the market. The dimension is operationalised by the four phases of Cooper's (1990) stage gate model: ideation, conceptualization, testing or market launch. In combination with four parts of business: packaging, product, branding or service. These are based on the four agro-food
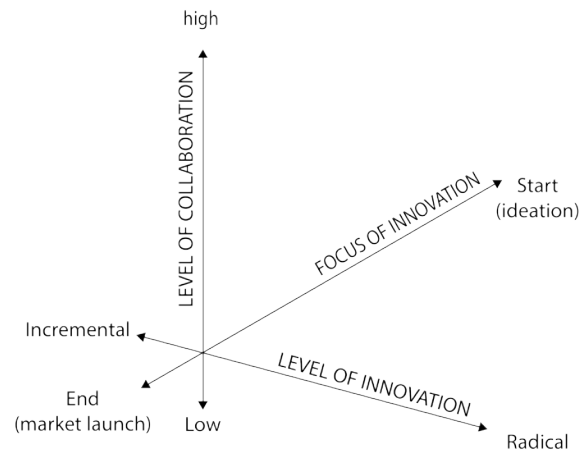
Figure 37. The three dimensions of mental innovation space

chain innovation activities of Caiazza *et al.* (2014, p. 5) and correspond to buyer driven or product driven and technical or non-technical innovations. The second dimension, the level of innovation, is operationalised by the diversification matrix (Ansoff, 1957); ranging from incremental to radical innovation. Last, the level of collaboration dimension refers to the openness and amount of collaboration that is employed in the innovation process. Where a high level of collaboration is shown by extensive collaboration and openness with different stakeholders during the process:

- 1A: Focus of innovation A: the stage of innovation the companies would want focus on: ideation, conceptualization, testing, or market launch.
- 1B: Focus of innovation B: the parts of their organisation companies would be willing to innovate: product, packaging, branding, or service.
- 2: Level of innovation: the level of innovation the companies are interested in: adjustment, re-design, new products, or radical innovation.
- 3: Level of collaboration: the amount of collaboration and exchange the companies would like with their customers.

If a firm has a large MIS, it means that the firm is: first, willing to innovate in new product development from the beginning on different parts of their business; second, willing to radically innovate and focus beyond current boundaries; and third, willing to employ a high level of collaboration in the innovation process. If a firm has a small MIS it means that their envisioned innovations are only towards the end of the NPD process, incremental and that the process is closed and internal until the end (Fig. 38).

3.2.3   ACTORS IN THE VIETNAMESE AGRO-FOOD VALUE CHAIN

Vietnam is a large producer of agro-food products, both for export and local consumption. Rice-based agriculture dominates but Vietnam also produces sugar cane, cassava, coffee, meat (especially pork but also chicken). fish and a wide variety of vegetables and fruits (FAOSTAT, 2013). In this paper the focus is on the agro-food value-chains for local consumption. In order to apprehend innovation in this field, an understanding of the different actors is needed.

Vietnam has transformed from one of the poorest countries 25 years ago to a lower middle

income country in 2009 (World Bank, 2012). The middle call is rising (De Koning *et al.*, 2015) and consumers have more to spend. This is reflected in their purchasing decisions on agricultural products: people buy more meat, processed food, fruits and sweets (General Statistics Office (GSO). 2012, 268-271). Many families are still self-employed farmers. However, this is becoming less common: the percentage of the population that are a self-employed farmer dropped from 53.1 per cent in 2002 to 41.7 per cent in 2012 (GSO, 2012, p. 110).

The penetration of supermarkets in the urban areas has also increased. In 1995 the first ten supermarkets arrived in Vietnam and in less than ten years, there were over 200 supermarkets in 30 cities (Nhieu *et al.*, 2005). The offering of agro-food products by multinationals increased

accordingly. These international brands are highly valued by Vietnam's middle class (Nguyen, 2003; KPMG, 2012). Reardon *et al.* (2012) found that the sales of the leading modern retail chains that sell food in Vietnam increased from 100 million USD in 2001 to two billion USD in 2009. Multinationals operating in developing countries, seldom engage directly in the production of crops or agricultural commodities (Bijman, 2008).

On the other hand, agro-food products in Vietnam are still mainly bought on the so-called "wet-markets", especially fruit and vegetables. Wertheim-Heck *et al.* (2014) find that in Hanoi over 95 per cent of the vegetables are still being purchased on these markets. Wet-markets are open-air markets, where consumers buy products directly from farmers on a daily basis. These short value chains, with direct contact between
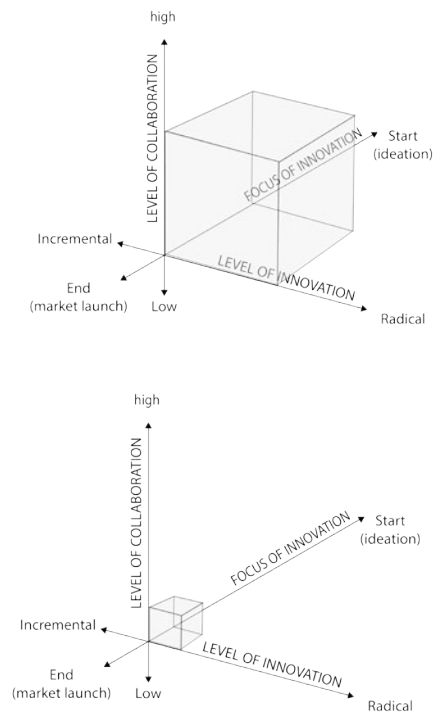

Figure 38. Visualisations of a large (top) and a limited (bottom) mental innovation space

consumer and farmer, often rely on family labour. These small-scale farming units dominate agriculture in Vietnam (Tisdell, 2009; Arita & Dyck, 2014). The downside of their products is the repeating recordings of abundant chemical use or other "unsafe" practices (Normile, 2013; Wertheim-Heck *et al.*, 2014; Dinham, 2003). This causes consumers to seek alternative sources of "safe food".

So, the farmers have the advantage of very short value chains and no middleman. This makes that their prices are low and the contact with the customer intense. The multinationals on the other hand benefit from long-term experience and brand recognition. An overview of the different type of players is captured in Fig. 39.

The need for innovation and the Vietnamese agro-food firms

Vietnamese agro-food firms are sandwiched in between the farmers and multinationals and also competing for a place in the rapidly changing market arena. Caiazza *et al.* (2014) found that more than half of the European agro-food firms in their study, realized or were planning technical innovations and non-technical innovations. The latter to reinforce their marketing to be able to enter new markets, among them Southeast Asia. They also found that many of the European firms saw non-technical innovations, involving inter-organisational relations and marketing activities, as the only way to introduce products in new markets that are significantly different from their domestic market. Since these international players are planning both technical and non-technical innovations, the local players also need to focus on both technical product/process innovation (product driven) and non-technical marketing/organisation innovation (buyer driven). The Vietnamese firms will need to strengthen their position to be able to keep on serving the rising middle class, for example by employing customer centric innovation.

However, the unique position and characteristics of the agro-food firms give them three advantages over the other players. First, the (perceived) quality of the products is often higher than that of the products sold on the wet-markets (De Koning *et al.*, 2015). Second, these local players have short value chains and this can be a competitive advantage (Kottila & Rönni, 2008) because all innovation actors are within or related to one firm. The Vietnamese agro-food firms often cover the whole agro-food system within one organisational entity. An agro-

food system as defined by Caiazza and Volpe (2012) is the "interdependent set of institutions, activities and enterprises which collectively develop and deliver material inputs to the farming sector, produce primary commodities, and subsequently handle, process, transport, market and distribute food and other agro-based products to consumers". Third, they are close to the local Vietnamese population, not only geographically closer but also mentally more alike because employees and customers are from the same cultural background. Having the customer at arm's length, means there is more ground for mutual understanding and this is an advantage over the international players.

Open-innovation, or specifically co-design, is believed to make use of these three advantages because it is based on close customer contact and mutual understanding. Therefore, this study investigates the fuzzy front end of innovation and whether these firms are willing to include their employees and customers in innovation and design processes.
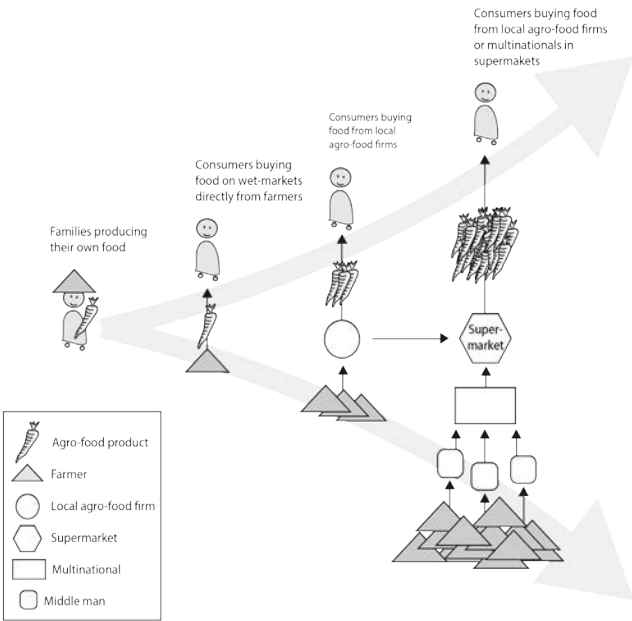

Figure 39. Agro-food consumers and producers in Vietnam

3.3   METHODOLOGY

This paper is set out to explore the MIS according to the developed model of Vietnamese agro-food firms operating on the local market.

In total, 14 SMEs were selected for this study, based on varieties in product category (vegetables and fruits, meat and fish, coffee and tea or processed food products); their high willingness to innovate; and their focus on the consumers of the Vietnamese middle class. The SMEs were based in North (three). South (nine) and Central (two) Vietnam. An overview of the 14 companies (two companies were used as a pilot) can be found in Fig. 40. The companies have been kept anonymous and are referred to in numbers based on the order of the interviews. The cases A and B represent the pilot cases.

The initial contact with the companies and funding for the activities was provided by the Get Green Vietnam project, funded by the EU SWITCH-ASIA programme. The companies were contacted with the question if they would be interested in organising an open-innovation and

Figure 40. Companies involved in the study and the sector they operate in
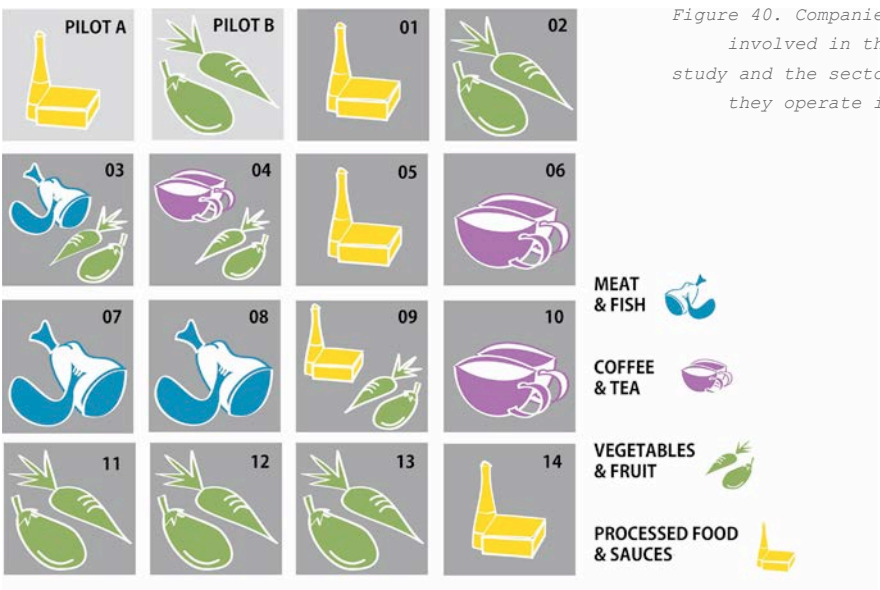
co-design activity. If they were interested, a meeting was scheduled for an interview to discuss and define the problem definition for such an activity. In other words: embark on the fuzzy front end of innovation. It is important to note that this process was not hypothetical but that the outcomes were used to organise an actual co-creation workshop for innovation later on.

The problem definition interviews were executed between February 2014 and June 2015. They lasted between two and three hours and were audio recorded and transcribed afterwards. During the interviews, one to two representatives of the companies were present. The CEO, founder or managing director was always one of them. The interviews were executed in English but a Vietnamese translator was always present for the clarification of terms, questions or concepts that were not clear.

The topics discussed during the interviews were the origin of the firm, their new product
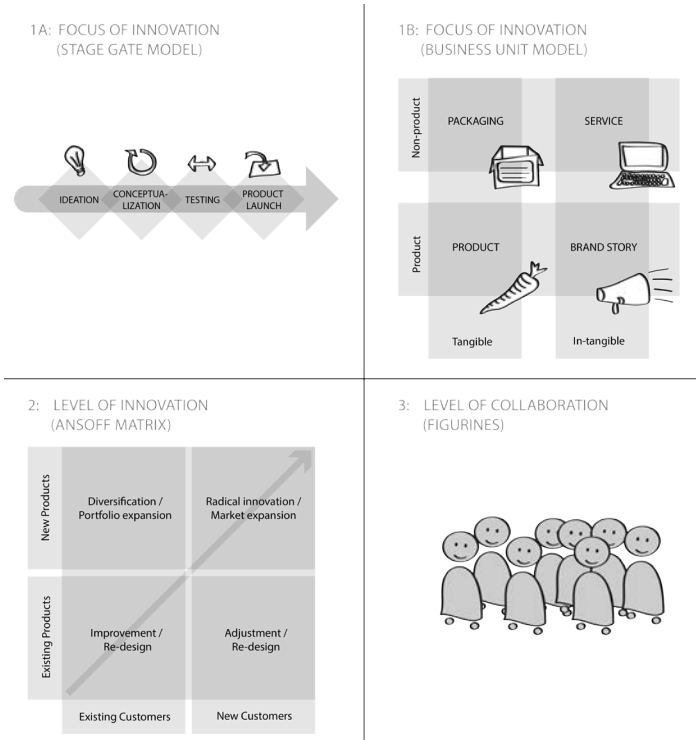

Figure 41. The four visuals as used during the interviews

development process, current involvement with the customers, what they expected from a co-design workshop and the three dimensions of the MIS model. In order to be able to discuss the dimensions of the model it was required to connect basic theory to intuitively understandable concepts in the interviews. This was needed because the companies were less familiar with the theoretical concepts of innovation. Therefore, four models were used as a visual aid to discuss the three dimensions of the MIS model (Fig. 41).

The four models guided the interview and the process of defining the innovation problem that could be a starting point for a co-design workshop. Each of these visual models was brought on an A4 to the interviews. The discussion of these models results in the necessary insight into the MIS of the selected companies. In the week after the interview the problem definition and innovation focus for the co-design workshop were sent to the companies for one last round of feedback.

3.4   RESULTS

The results are presented in three parts. First, the focus of innovation of the companies is presented according to the stage gate model and the business unit model as used during the interviews. Second, the level of innovation is presented according to the Ansoff matrix. Third, the level of collaboration and co-design opportunities that the companies envisioned are presented. Each paragraph starts with a short summary for each dimension.

3.4.1   FOCUS OF INNOVATION

Each company indicated one or two areas on both focus of innovation models. The total number of choices can be found in Fig. 42 and Fig. 43. Overall, companies were most interested in only buyer driven and non-technical innovations of "packaging" and "brand story". They felt this was important because it could help their current products to stand out among (international) competition. Companies wanted to work on these innovations during the phases of testing and product launch. Ideation and concept development were less popular

choices for innovation and customer involvement because companies have little experience with this. This shows a relatively small MIS.

The idea that customers would be involved in the ideation of new products or service ideas was often hard to understand for the companies. They mostly believed that the product needed to be perfect first. Company 03 said: "There is not much we changed because of what consumers said. We are still coming up with new product ideas and still testing". This shows that ideation or concept development and customer involvement are seen as different processes. This also shows from another quote by Company 03: "At this time we put more weight on the farmers then the consumers. We want to have the product first and then we help the consumer".

Often the idea to found the company originated from a technical innovation or copies of technical innovations from abroad. For example Company 04: "I (founder) have a friend
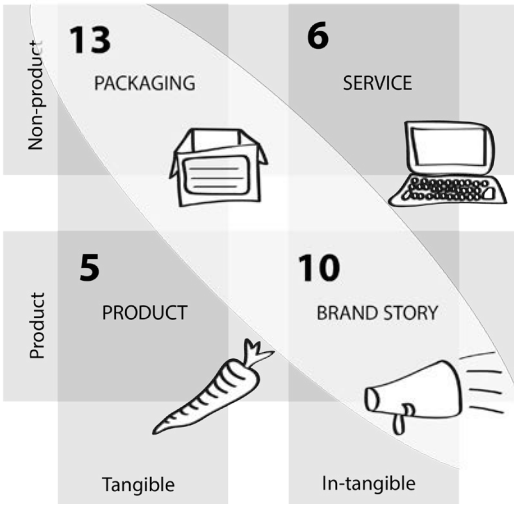

Figure 42. Focus of innovation 1, combined view of all companies

Figure 43. Focus of innovation 2, combined view of all companies

from Israel; he gave the idea and the technical details on how to grow guava". Or Company 14: "My company was founded in Vietnam but the idea comes from Japan. They developed a technology after the Fukushima disaster to grow clean vegetables in the city locally". Or Company 12: "15 years ago I was an exporter of food stuff to Germany. Export of tropical fruits. After that I realized we import most "functional" food from overseas. In Vietnam we have a lot of herbs and leaves, so why don't we not produce it ourselves?" These quotes show that companies often did not develop their production method or business model themselves. They did not perform a process of ideation, therefore it is understandable companies find it hard to imagine going through such a process with their customers.

Many companies said their future goal and challenge was to expand by selling more of their already developed products. Therefore the companies often wanted to focus on improving the packaging and the brand story and formulated very general problem definition. Such as: "How can we make people choose our chicken in the supermarket?" (Company 07) or "How to show from the packaging that this is a very high quality product?" (Company 05).

The companies said they wanted to stand out with their product but find this difficult with all the other offerings in supermarkets. This shows that the local agro-food firms are indeed in a difficult position with the international players growing on the Vietnamese market. An employee from Company 1 said: "I think marketing is very important in showing that the quality is very pure. But how can customers know about this, how can we make customers to buy it. Because in the supermarket, there are so many products". A smaller budget for advertising and a smaller product portfolio compared to the international players, were also mentioned as barriers: "I cannot afford the advertising budget and we only have one product (4 other teas will come later) so it is hard to get in the supermarket" (CEO, Company 12).

3.4.2   LEVEL OF INNOVATION

Each company selected one or two directions for innovation on the Ansoff Matrix. The total number of choices can be found in Fig. 44. Overall, the level of innovation the companies selected most was that of improvement and re-design. This shows that companies do not aspire radical innovation and that their MIS for this dimension is rather small. This is often a

result from the limited experiences with new product development, the short-term planning for the future and the perceived limitations of a small advertising budget.

The focus on improvement and re-design were most popular, this is a focus on existing customers and existing products. Most companies do not have a clear new product development process. Improvements are thought of "on the go" and small innovations happen to be ad-hoc. This ad-hoc process facilitates incremental and not so much radical innovation. Company 3 was very straightforward about their strategy of incremental innovation: "The ideas for the products are not radical new ideas but existing products in the market and we copy". Many companies thought their default choice was to focus on existing customers due to their limited advertising budget. Company 14, for example said they wanted more of the same customers: "We want more customers. We want to target more of these people. We have limited resources so we first only want to target these customers and not others".

Company 12 was one of the companies in the process of developing new products: four new types of tea for their existing customers. They were also limited in their advertising budget but looked for ways around it: "For the 4 new products we do not use big channels on TV because we do not have much money. So we sponsor a good event, or a street fair. That is a

<figure>

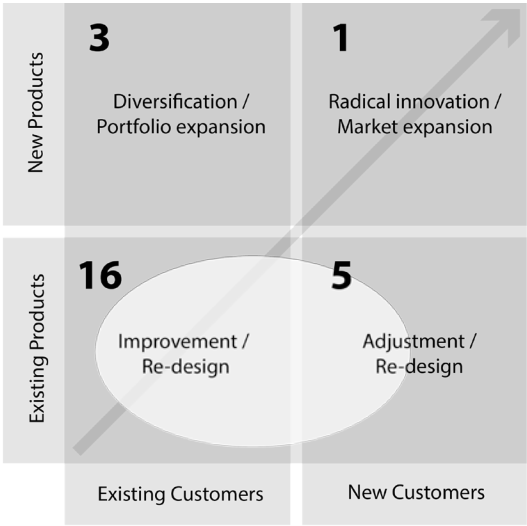| | New Products | | |
| --- | --- | --- |
| | **3** Diversification / Portfolio expansion | **1** Radical innovation / Market expansion |
| Existing Products | **16** Improvement / Re-design | **5** Adjustment / Re-design |
| | Existing Customers | New Customers |

</figure>

Figure 44. Level of innovation 1, combined view of all companies

good way to get the product to the target consumers". A limited planning for the future also shows that companies do not plan for radical innovations. For example, Company 1 answered the question of where they would be in five years with: "Still confused. We will be thinking about fish sauce for children. With a different kind of fish, with anchovies which is very good for the development of the brain". They gave the same answer to the question where they would be in one year.

3.4.3   LEVEL OF COLLABORATION AND CO-CREATION

The level of collaboration and possible co-creation was discussed according to all three previous models in combination with the collaboration figurines from Figure 8. Overall, the companies regarded co-creation as a promising method for innovation. This shows a slightly larger MIS than on the other two dimensions. Collaboration for innovation with customers was a new concept for all companies, and co-creation even more so. None of the 14 companies employed such an activity before. However, close contact and personal contact with customers is highly valued in Vietnam and this made that the possibilities of involving customers in a creative innovation workshop were generally enthusiastic.

Currently, if companies are in contact with their customers, it is in the testing phase but predominantly during and after product launch. Traditional ways of testing are employed, such as inviting test panels and doing market surveys. During product launch companies, for example organise tastings introductions in supermarkets. They also use social media, direct e-mail and telephone to get feedback after product launch: "I have 7,000 Facebook friends so I got feedback from them but also via telephone, e-mail and then I know what they liked and preferred. Then I changed the flavour" (CEO, Company 1). However, some companies do not involve customers in any of their activities, such as Company 3: "To try we ask the team and it is a team evaluation. The employees somehow are all customers too".

One other remarkable finding was that many of the companies organise tours and excursions to their farms to connect to their customer. They organise these activities because they want to show the superiority of their products over the products sold on the wet-markets. By being transparent about their production processes the companies want to show that their products

are "safe": "We want to make a farm tour for the customer and then we can show how it is grown from the seed and show the process in our farm" (Manager, Company 2) or "The regular customers, all of them visited our farm, that is why they trust our product" (CEO, Company 1).

All companies believed direct contact to be the most effective way of knowing what customers want and finding out how to improve their products (incremental innovations). Company 2, for example: "We try step by step to improve and always talk with the customer when they come. We mostly always have one person that stays in the shop there just to talk to the customers". However, companies see the limitations in their current methods and would like to try other ways:

> We hired a marketing agency to do a survey but they always say only positive things and that there is a huge market with a lot of interest. But then, when we introduce it to the people on the market we also get many negative feedbacks. So we want to understand the real desire (Manager, Company 5).

> Somehow we want to get the feedback of the consumer, but actually not in the survey way. There people just tick yes/no. No one wants to spend time to actually write more. Also, when we do the co-creation we can get the feedback of the consumer and they can discuss with the R&D and the marketing, and not just taste the tea (CEO, Company 12).

One of the foreseen barriers for co-creation was that some companies were afraid of revealing their secrets. Since many companies owe their existence to copying someone else this is not remarkable. For example:

> Now we just brought the product to only a few customers, because we still want to patent it and not that it appears somewhere else. Maybe after we got the license of the department then we can ask for feedback from customers (CEO, Company 12).

Some companies brought another barrier to the table. They would like to get suggestions during a co-creation activity but where afraid not having enough staff to implement these changes after. Company 2, for example: "Because I also get ideas like this from the supplier but the problem is we do not have a person to do this. We do not have the staff to make it".

Although the companies never did activities similar to co-creation, the overall reaction of the companies was enthusiastic. They viewed co-creation as a promising method for innovation.

This shows a slightly larger MIS than on the other two dimensions:

> By meeting users, we can get to know what customers comment about our products so that we can improve our products. Besides that, we also get some new ideas from people. It is a very good way to make our products better (employee, Company 1).

> Get the opportunity to contact and connect with the customers, make them know well about product's value and listen to them. I believe that way is effective to better our product (CEO, Company 14).

> Why get involved in co-creation? To make a better future plan; to know what people think about the design; to get ideas for new flavours (CEO, Company 6).

3.5 DISCUSSION

This study was set-up to explore the "MIS" of the agro-food firms in Vietnam and their willingness to involve customers in their innovation process, or co-design. The discussion is presented in four parts. First the limitations are discussed. The following three parts correspond to the three parts of the results section and the axes of the MIS model.

3.5.1   LIMITATIONS

Unfamiliarity of the companies with the terms and theory of innovation and abstract concepts called for more explanation, this directed the study towards a qualitative approach. This showed to give rich insights and deep understanding but it also limited the number of cases. Additional quantitative data of a larger sample could have strengthened the conclusions. Next to that, the problem definition interviews were executed in English.

The interviewees were proficient in English but some nuance could have been lost. However, a Vietnamese translator was always present to resolve issues of possible ambiguous understanding, this mostly reduced the loss of nuance. Next to that, the visual models helped to discuss more difficult and abstract terms.

Last, the pilot study did not cover the entire range of food product categories. However, this

did not cause trouble in the main study and the pilot study proved to be a valuable preparation.

Focus of innovation

The focus of innovation of the companies envisioned was mostly on packaging or branding and correspondingly to testing or product launch. This shows that companies were focused on the buyer driven and non-technical innovations. They felt this focus was important because it could help their current products to stand out among (international) competition. The focus was more on innovative ways of selling their product than innovating their product. This does not show a wide focus: they are willing to rethink only a small part of their business and not embark on a full innovation cycle. The latter also comes from never having embarked on ideation or conceptualization processes before which are typically part of product innovation processes. In Vietnam the understanding and importance of the value of product innovation in the value chain is limited (Jin, 2015, p. 20). The results also showed that often the originating ideas and sometimes even the concepts for founding the companies came from outsiders.

Level of innovation

The level of innovation companies envisioned was not radical. The firms did not see beyond improvements of current design because they had not much experience with NPD and because they felt they had an insufficient marketing budget to engage more customers and innovate. Caiazza *et al.* (2014) also find that high barriers for innovation in, for example the Italian agro-food value chain are the costs of the process and the lack of sufficient information, knowledge and experience to implement internally. However, the need to innovate was recognised by many of the companies.

Planning for the future is necessary for innovation (Poolton & Barclay, 1998) and radical innovations are critical for the long-term success of a company (McDermott & O'Connor, 2002). Most companies however did not have a long-term planning, for all of them five years was too far away to envision a future and for some even one year was to far ahead.

Level of collaboration

Co-design was suggested to the companies as a strategy for innovation and this was received with enthusiasm. Outsider input can help to broaden the current narrow MIS of the

companies. Customers are not limited by the companies' boundaries but because the customers are geographically close to these companies they share the same cultural background. This makes the mutual understanding high, higher than for international companies. Also, trust and transparency in the agro-food sector in Vietnam is a key issue (De Koning *et al.*, 2015). Opening up the innovation process and involving customers could aid the companies in establishing trust and transparency with their Vietnamese customers. The companies also foresaw increased transparency to be a benefit or outcome of co-creation. Motives for engaging in open-innovation activities were on topics close to the market such as meeting customer demands or keeping up with competitors. Van de Vrande *et al.* (2009) find the same for SMEs in the Netherlands.

To summarise, the envisioned innovation topics were often improvements or adjustments (low level). preferably of a non-technical nature, close to the market (narrow focus) but with customer involvement at the end of the innovation or new product development process (somewhat collaborative).

3.6   CONCLUSIONS

To conclude, it is believed that the characteristics and willingness of the local agro-food firms can create an open atmosphere in which co-creation can foster innovation in order to strengthen the competitive position of the local agro-food firms. The enthusiasm of the companies is promising but the lack of skills and experience with innovation limiting.

Companies received support from outside when they founded their business and likewise they will need support for innovation and new product development in the future. In subsequent steps outsiders must help companies to familiarise with innovation and ideation. The focus in the interviews has much been on co-design activities where the level of creativity is high. Since the companies are not familiar with expressing creativity, co-design might be a hefty first step to take. Therefore, as a concrete first step, farm visits could be used to intensify mutual exchange between the employees and the customers. These are a good starting point because

transparency is one of the goals on these trips. If on these farm trips, more interaction and two way information exchange would take place, it could start to break open the current boundaries for innovation and broader the horizon. In other words, it could enlarge the companies' MIS.

Overall, the MIS of the companies in this study is rather small but the potential value of co-design to boost innovation is acknowledged by many. The combined MIS of the 14 companies is pictured in Fig. 45.

Also, the government should stimulate a focus on local market. Now international markets and export are often seen as the Holy Grail because of potential higher profits. However, a striving local market can ensure a more stable and more independent economy, which will aid Vietnam in elevating its population.

Finally, the MIS model proved to be helpful in understanding companies and their capabilities to think about innovation. The unique combination of the collaborative aspect of open-innovation with more traditional innovation theory was able to give insight in the potential of hybrid partnerships of the company, customers and outside design- or innovation-consultants. The collaborative dimension was the one that captured the higher innovation capacities of the companies and the other two dimensions showed the gaps that needed to be bridged. This enabled identification of a starting point for innovation strategies for the local agro-food firms.

Figure 45. Mental innovation space of the 14 Vietnamese agro-food firms.
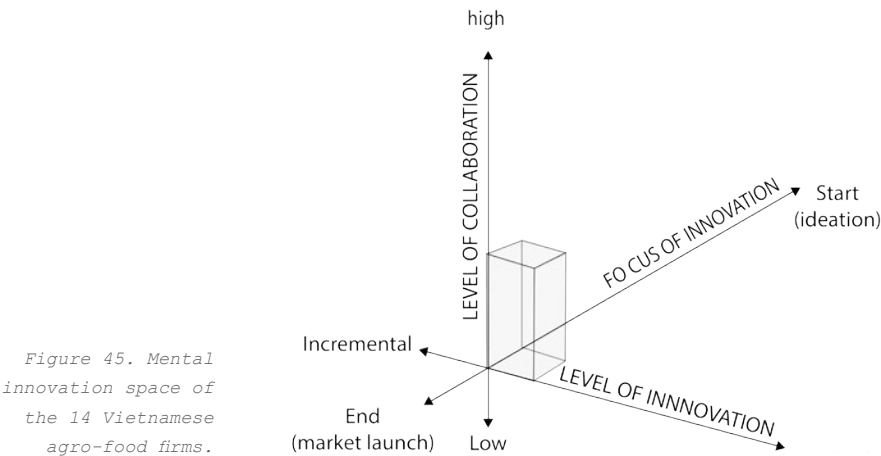
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Interlude III: three student projects in Vietnam

Several design projects were executed by students during the research. Following an overview of three projects that focused specifically on food and Vietnam. These projects did not contribute to the studies directly but they provided context and were a great source of enthusiasm.

The first project is about a vegetable growing kit for young mothers and their babies, in collaboration with GetGreen Vietnam. The second project is about online co-creation, in collaboration with an agro-food company (iNature) in Hanoi. The last project is about a gasifier for sustainable cooking, in collaboration with the Centre for Creativity and Sustainability in Vietnam.

MOTHERS, GROW YOU BABY A BOTTLE!

A tool-kit to grow vegetables at home in the city of Hanoi

ASSIGNMENT

The main goal of the project was to provoke behaviour change among Vietnamese middle-class households towards sustainable food consumption, using a physical tool.

RESEARCH FINDINGS

Elaborate contextual research, conducted during a three month stay in Hanoi, was used to identify problematic behaviour within the area of food consumption. Throughout the project Vietnamese experts and organizations were consulted to ensure the concept would fit the Vietnamese context.

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>
> *MSc thesis Design for Interaction*
>
> *Client: GetGreen Vietnam (GGVN)*
>
> *Sep 2013 - Mar. 2014*

The topic of 'food safety' (often linked to the term 'sustainability') grabs everyone's attention in Vietnam. It is and has been a major problem, leaving consumers in despair. The participating young mothers indicated that food safety (especially of vegetables and fruit) is a big concern for them and their family. Although the government tries to improve the production of safe and organic vegetables with laws and regulations, a trustful system has not yet been established.

A lack of trust around vegetables that claim to be clean and safe causes consumers to be lost. But as long as there are no immediate accidents among relatives or friends when consuming conventional vegetables, they keep buying vegetables that might not be safe to consume on the long term.

Especially the intake of pesticide residues by young babies during their first two years can have a negative impact on the development of the baby's brain and immune system.

Figure 46. The final tool-kit for growing vegetables in Hanoi

When talking about sustainable food consumption the young mothers indicate that it is the duty of the parents to teach their children about this topic. On the other hand the participants indicate that a lot of mothers do not have the knowledge or proper education to know how to consume in a sustainable way. Especially the lack of knowledge about safe food is seen as a big problem.

FINAL DESIGN

The final design proposed in this thesis is the 'Bottle Garden' toolkit that empowers young mothers in Vietnamese middle-class households to start growing safe vegetables for their baby at home. The toolkit emphasizes the importance of consuming safe/organic produced vegetables.

ONLINE CO-CREATION

For sustainable food consumption in Vietnam

ASSIGNMENT

i-Nature is a company that produces and sells sustainable meat and vegetables. Sustainable farming is understood as not only preventing harm to the environment but also providing healthier working conditions for the farmers and of course healthy products for consumers. i-Nature's ultimate goal is to teach large groups of farmers how to use their techniques, so they will be implemented and sustained on a big scale in Vietnam.

A digital co-creation tool will be designed to empower consumers to recognize trustworthy suppliers of safe food, and to help i-Nature to gain customer insights so the company can offer consumers a trustworthy and convenient alternative to regular food.

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MSc thesis Design for Interaction

Company: iNature

May 2014 – Nov. 2014

RESEARCH FINDINGS

Vietnamese consumers worry about food safety. Chemicals in pesticides and fertilizers are believed to cause cancer. But companies claiming to sell 'safe' food are often not trustworthy, and small and local companies are often not trusted.

The focus on digital co-creation is based on two trends: First, the Vietnamese make extensive use of the Internet for social media and comparing products. Second, researching brands is one of their main activities; the openness to brands and interaction online is the highest in all of Asia.

The potential of digital co-creation in the context of sustainable food consumption turned out to be limited, but as part of the design goal it did lead to a tool for co-creating data on the trustworthiness of a supplier, by customers, independent of subjective parties and without the need for expertise on sustainable farming.
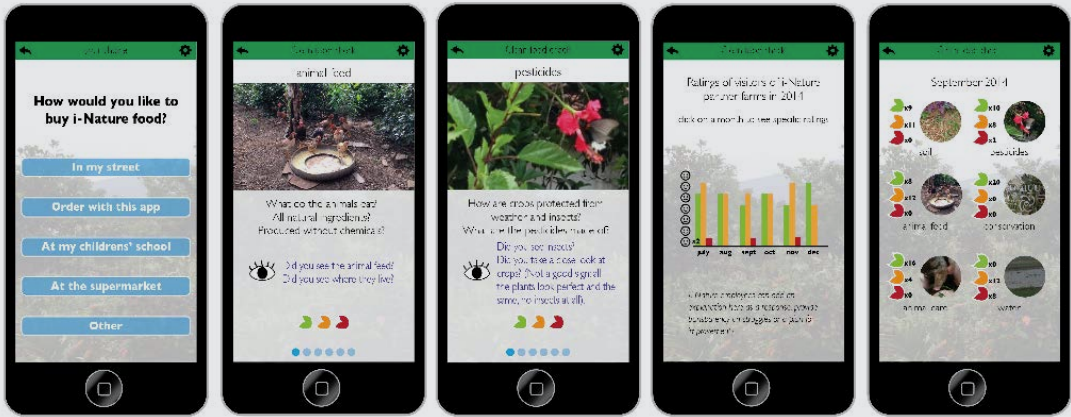
Figure 47. The final application concept for sustainable food

Linking digital co-creation to a physical activity, can help increasing response rates to digital co-creation activities. The company prioritizes efforts to improve the convenience of their products and services through simple multiple choice questions.

The final goal of the tool is to:

- Enhance trust of potential customers, gain mutual (company-customer) insights, generate ideas for improved products and services and make customers' food consumption more sustainable

FINAL DESIGN

The i-Nature Sustainable Food application, and especially the Clean Food Check function can contribute to consumers' understanding of sustainable agriculture, and it can help the truly sustainable food supplier gain trust. The application can give i-Nature the necessary customer insights to improve their offer and service to get a stronger competitive position on the Vietnamese food market.

DESIGN OF A USER FRIENDLY CONTINUOUS GASIFIER

For the rural farmers & urban street food restaurants of Vietnam

ASSIGNMENT

Although LPG has become a popular fuel for cooking in Vietnam, the rural farmers and the urban restaurant owners still rely on solid fuels for cooking longer than 1 hour because of the high price of LPG. The solid fuels are used like the beehive coal, wood, rice husk or straw have a negative effect on the health of the users and the environment. The users are aware of the disadvantages,

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Feb. 2016 - Jun. 2016

but they see no affordable, more sustainable alternatives.

RESEARCH FINDINGS

Four needs and desires from the context were found important for the success of the final design.

(1) Continuous cooking, because of the style of Vietnamese dishes that requires a long period of continuous heat.

(2) Affordable low *operational* costs due to the style of cooking.

(3) Less toxic emissions & greenhouse gasses, because now the beehive coals used are emitting toxic fumes.

(4) And a simple comprehensible Interface for use and to take away the fear of a new technology.

Figure 48. The final design for the slow-cooker

Figure 49. The final prototype for the slow-cooker in use

FINAL DESIGN

The gasification technology offers and affordable method to use cheap biomass fuels for cooking without the negative impact on health and the environment.

The Slow-cooker is a gasification stove capable of cooking continuously while imposing no restrictions on the variety of traditional Vietnamese dishes which can be prepared. The low operating costs and high usability makes it attractive for commercial use.

This design is mainly focussed on the urban street food stalls, but can later be easily transformed into a less advanced version for the rural areas. The Slow-cooker is a cleaner slow-cooking alternative for the beehive coal stove due to a more complete and efficient combustion which is better for the health of the user and the interior of the stall. Using the semi-continuous gasifier technology, it can cook for four hours in one batch of wood pellets and can be refilled to extend the cooking time.

4. Models of Co-creation

ABSTRACT

This paper aims to give an overview of the existing models of co-creation and create meta-models from these existing ones. The existing models were found in academic and popular or business publications. A total of 50 models was analysed and clustered and used to create 4 meta-models of co-creation. These meta-models depict the 'joint space of co-creation', 'the co-creation spectrum', 'the co-creation types' and 'the co-creation steps'. They form a framework to classify existing research as well as define boundaries for upcoming projects. These meta-models should contribute to the clarity, understanding and application of co-creation.

4.1 INTRODUCTION

Co-creation is a term that found its way into our daily design and marketing vocabulary. Others, outside the field of design and marketing, have also started to use it. Now different people, from different fields, use it in different ways. This does not add to the clarity of the, still young but maturing, concept. Therefore many have tried to capture or structure co-creation in a model or framework and to subsequently visualize it. These visualizations are powerful tools for understanding because they are uniform and show connections and dependencies instantly. Throughout this article the word model will be used when referring to a visual representation of a structuring of co-creation. A model should aid others in understanding what co-creation is, the steps in a co-creation process and how it relates to other fields such as service design, New Product Development, open innovation, participatory design and more. This paper aims to give an overview, according to the available models in literature, of the different ways of understanding and capturing co-creation. Next to that, meta-models are created that summarize the content of the existing models.

4.2 LITERATURE

The very literal meaning of co-creation is: together (co-) make or produce something (new) to exist (creation). Co-creation finds its origin in co-production where consumer participation was integrated in the supply chain. At first it was introduced to achieve costminimization (for example IKEA) but in 1990 John Czepiel introduced the idea that customer participation may also lead to greater customer satisfaction. Song and Adams (1993) noticed that customer participation could also be an opportunity to differentiate. At the turn of the century, Prahalad & Ramaswamy (2000) presented the idea that customers are taking active roles and that their relationships with firms are shifting. Prahalad & Ramaswamy continued along this route and in 2004 they published a paper in which they used the term value co-creation. They described co-creation of value as an initiative of the customer that is dissatisfied with the available choices and therefore takes action. Jaworski & Kohli (2006) somewhat followed the assumption

that the customer is looking for a dialogue with the firm and proposed guidelines to "co-create the voice of the customer". Now, economies in the West are transforming towards a service dominant logic and consumers no longer buy either goods or services, but products that provide a service and the value depends on the customer experience. Consumers buy an experience of which the product or service is an artefact. Therefore, Vargo and Lush (2008) argue that in a service dominant logic (opposed to a goods dominant logic) the customer is always a co-creator.

During these changes in the fields of production and marketing economics, similar shifts of focus occurred in the field of design. In design, co-creation has its roots in human centred design (HCD) and participatory design. These movements emerged in the 70s in Scandinavia, where joint decision-making and work practices started to receive attention. One of the key words of these movements was empowering. Essential was also the belief that the ones who are affected by design should have a possibility to influence the design (Mattelmäki & Sleeswijk-Visser, 2011).

Now, in participatory design, participants are seen as beneficial contributors to the design process by offering their expertise and knowledge as a resource. That is why the term co-creation is often associated with participatory design. Ehn (2008, p.93) describes participatory design as design "with a special focus on people participating in the design process as co-designers". In the world of design practice today this seems common knowledge. Nowadays, designers have become the advocates of users and are asked to create ideas that better meet consumers' needs and desires (Brown, 2008; Badke-schaub *et al.*, 2005; Holloway & Kurniawan, 2010; Brown & Wyatt, 2010; Maguire, 2001).

From the words of Ehn we understand that co-design is a process used in participatory design. Co-design however, does not always have the same meaning as co-creation. Designers often use co-design to describe the process of collaboration in which co-creation can take place, so they see co-creation as subordinate to co-design. Other disciplines such as marketing more often use the term co-creation as a trend for openness, collaboration and partnership and co-design as one of the practices within co-creation, so they see co-design as subordinate to co-creation, but the terms are often tangled (Mattelmäki & Sleeswijk-Visser, 2011). The different

views bring along a whole other range of substitutes for co-creation, such as reflective design, cooperative design, open innovation, mass customization, coproduction, user-generated content, collaborative innovation.

In the last decade, all these terms have appeared widely in scientific literature, in professional magazines, websites of product development companies, design research and market research agencies and also in reports of public organisations. In these writings people show examples of how their version of co-creation has been applied. And "while the literature on co-creation often fails to raise critical issues, discussions of benefits are abundant" (LSE Enterprise, 2009) it is generally acknowledged that collaboration in new concept development increases the number (of sources) of new ideas in innovation. Co-creation enables idea generation through shared knowledge and experiences and a better understanding of the user. Besides a larger pool of ideas and a better connection of the products to the user, it is also believed that co-creation benefits an increased speed to market, reduces risk and increases customer loyalty (Auh *et al.*, 2007). And, due to participation or co-operation, the customer will experience greater satisfaction and commitment (Dong *et al.*, 2008; Bettencourt, 1997). Finally, the likelihood of positive word-of-mouth is higher with greater levels of customer participation (File *et al.*, 1992). In organizational literature, co-creation has also been praised, in terms of what it can bring to the process of change. Co-creating changes, instead of imposing changes top down, is said to be more effective. This is because it becomes meaningful for the people involved, it ensures a platform for many to be heard and room for diversity, difference and desires (Wierdsma, 2004; Wenger, 2000).

From the literature cited, it can be understood that there are different definitions of co-creation and that there are other disciplines/methods often tangled with co-creation, such as co-design or open innovation. Also, because co-creation is described in many different practical applications, there is not a fixed framework or plan to follow. We support the suggestion that there is a need for "creating tools for co-creation" and conceptual clarity (Schrage, 1995; Payne *et al.*, 2007; Roser *et al.*, 2009).

This paper aims to bring some conceptual clarity to the term co-creation by analysing existing models of co-creation and generate meta-models based on the similarities of the existing

ones. Models are a powerful tool for clarity and understanding because it is uniform and shows connections and dependencies instantly. By analysing the existing models, it is hoped that clarity in the form of meta-models can be given on three different levels: (1) theoretical: the co-creation spectrum and how it relates to other terms; (2) practical: the different types of co-creation and how they relate to each other, and (3) applied: the different steps in a co-creation process.

4.3 METHOD

The method for finding the relevant models of co-creation was two-fold. In the first place SciVerse Scopus was used to select all relevant articles until November 2015. The search terms included 'co-creation' (in the title) and 'model' or 'framework' (in the title, keywords or abstract). This resulted in 249 articles. It was a deliberate choice to use the term co-creation and not co-design. Co-design was not used because this term is often limited to the fields of design and computer studies and co-creation was used because this is the term also used in business and management literature.

The abstracts of these 249 articles were scanned for the possible presence of models or frameworks of co-creation in the article. A full version of all articles that hinted at presenting or including a model or framework, a total of 45, was downloaded. Next, the articles were searched for the presence of a visual model or framework. Out of the 45 articles, 28 unique models of co-creation were selected.

Next to that, a more arbitrary search method was used. Google was used to find models of co-creation, by searching only for images with the terms co-creation, co-creation in combination with model and co-creation in combination with framework. The search was non-personalised and in English. The first 100 images of the three search results were scanned for useful input. To not be able to include all images is a limitation of course, as is the seemingly haphazard limit of a hundred images. However, we found that around a hundred images repetition of images occurred and almost no new models were found. Out of the 300 images, 22 (unique)

images were selected for their representation of (1) co-creation in relation to other fields, (2) different types of co-creation or (3) the process of co-creation. Images that were duplicates of the models found through the SciVerse Scopus (6 in total) were not counted in the 22. Also, if the source of the selected image was secondary, the primary source was retrieved and used to refer to the model. Together with the models from the scientific articles this resulted in a total 50 models that were analysed for their representation of co-creation (see Table 13 xx).

CO-CREATION MODELS	0 Joint space of creation	1 Co-creation spectrum	2 Co-creation types	3 Co-creation steps	Total
Only SciVerse Scopus (31)	11	4	7	6	28
Only Google Images (29)	0	7	9	6	22
Total	11	11	16	12	50

4.4 RESULTS

Fig. 50 shows a picture of all images used for this article. For reasons of keeping the article within reasonable length, the full size existing models have not been included. The reference list contains links to all full sized images. Contact the authors to receive a PDF including all images. A total of 50 models was analysed and assigned to one of the three pre-defined categories (1) the co-creation spectrum, (2) the co-creation types, and (3) the co-creation steps. However, during the analysis, another category occurred among the SCiVerse Scopus models. This category was labelled the 0-category of 'joint space of creation'. The number of models per category and search method can be found in Table 13. First, the models in the (0) category are discussed, as these are the basis of co-creation. Next, the models in the three other categories are discussed in order.

4.4.1 THE JOINT SPACE OF CREATION

This category includes the models of: Andreu *et al.* (2010), Edvardsson *et al.* (2011), Grönroos (2012, 2013), Laamanen and Skålé (2015), Payne *et al.* (2007), Prahalad and Ramaswamy (2004, p.), Ramaswamy (2008), Ramaswamy and Ozcan (2015), Skarzauskaite (2013) and Vargo *et al.* (2008).

The 11 models in the category of 'joint space of creation' represent two entities and an overlapping space or a space in between the two entities where creation can take place between
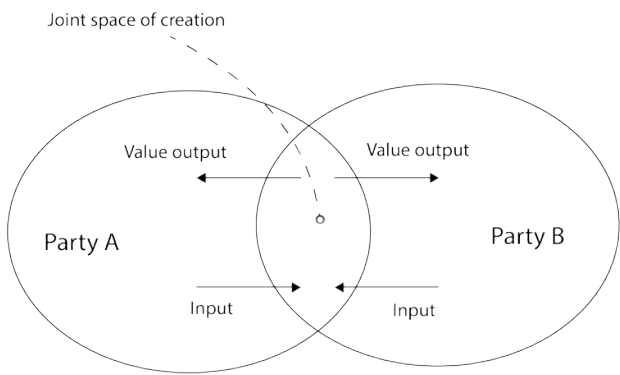

Figure 51. The joint space of creation.

these two entities: co-creation. These models show an often simplified representation of co-creation with a value input and output for both parties. The derivative meta-model can be found in Fig. 51.

4.4.2   THE SPECTRUM OF CO-CREATION

This category includes the models of: Customer-Insight (2010), Galvano and Dalli (2014), Lin (2012), Kosaka *et al.* (2012), Ojasalo and Keranen (2013), Prahalad and Ramaswamy (2004), Ramaswamy (2008), Sanders and Stappers (2008); Coates (2010), Roser *et al.* (2008) and Wulfsberg *et al.* (2010).

The co-creation spectrum gives an overview of models that place co-creation in the field of other similar or overlapping approaches / methodologies (ref). It shows that co-creation overlaps with other movements and terms such as open innovation and participatory design. There are two main movements to be seen: (1) co-creation as an open innovation movement and (2) co-creation as a participatory design method. The first movement also includes low levels of collaboration with limited influence on the design or output. The results also show models that place co-creating value opposite to more traditional business models. Traditional business models are often seen as models with no collaboration and therefore no customer influence on the output. The derivative meta-model can be found in Fig. 52.
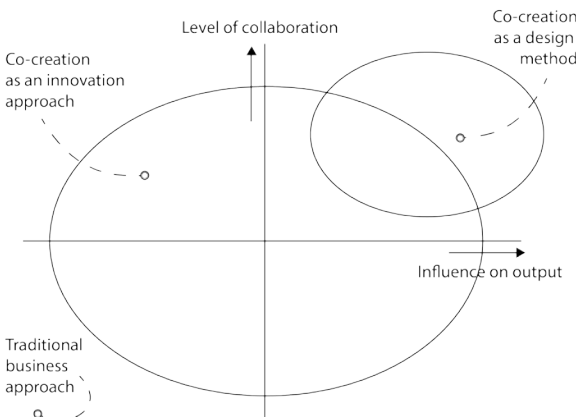
4.4.3 THE TYPES OF CO-CREATION

This category includes the models of: Bartl (2009), Fronteer Strategy (2009), Frow *et al.* (2015), Kang (2014), Kukkuru (2011), Muscroft (2011), Prahalad and Ramaswamy (2004), Quintarelli (2010), Rihova *et al.* (2013), SALES 20|20 (2013), Sawhney *et al.* (2005), Sense Worldwide (2009), Thorsten *et al.* (2013) and Vernette and Hamdi (2013).

These models identify different types or levels of co-creation. The types are often defined by a set of criteria or a set of axes. From the 11 analysed models, three general criteria can be derived to identify the types of co-creation:

- (1) The moment the co-creation takes place: at the beginning, middle or end of the design or innovation process, or even in use phase.
- (2) The amount of direct benefit or change is there for the co-creating end-user.
- (3) The level of collaboration between the two parties.

These three criteria result in different types of co-creation. The Fresh Network (from the business perspective) and Payne *et al.* (from the scientific perspective) describe the different types of co-creation in a comprehensive way. Both describe a scale with five types of co-creation that one can adopt (Payne *et al.*, 2007; the Freshnetwork, 2009) but these are not the same five types. Payne *et al.* consider personalized advertising on the lower end of the co-
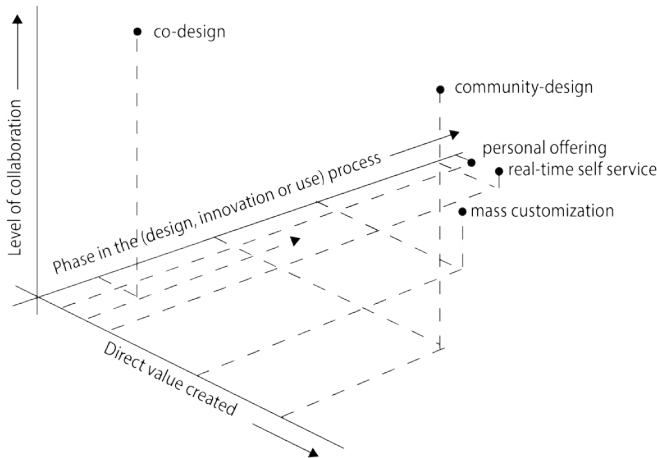

Figure 53. The types of co-creation.

222

creation scale and the Fresh Network distinguishes a last type on the co-creation scale where consumers take over the design process. In the middle of the scale, the types are more or less corresponding. Overall, from all models, five main types have been identified. The five types and the three criteria are depicted in the meta-model in Fig. 54.

- • (1) Personal offering
- • (2) Real-time self service
- • (3) Mass-customization
- • (4) Co-design
- • (5) Community design

4.4.4   THE STEPS OF A CO-CREATION PROCESS

This category includes the models of: 90:10 (2010), Aarikka-Stenroos and Jaakkola (2012), Castro-Martinez and Jackson (2015), Farrow Partnership (2010), Fronteer Strategy (2009), Grönroos (2012) Grönroos and Voima (2013), IDEO (2011), Lambert and Enz (2012), Muente-Kunigami (2013), Nagaoka and Kosaka (2012) and Sanna *et al.* (2012).

The models in this last category all establish certain steps to take in a co-creation process. They mostly include four to six steps. One can argue whether co-creation is a method, or an approach but no consensus exists. A method is a combination of tools, tool-kits, techniques
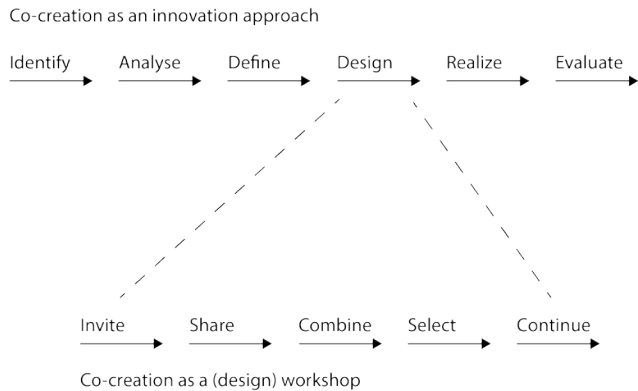

Figure 54. The steps in a co-creation process.

and/or games that are strategically put together to address defined goals. The field of design mostly uses co-creation as a method. An approach describes the overall mindset needed to conduct process. Various fields use co-creation as an approach. Because no consensus exists, the meta-model includes both the design method and innovation approach view on co-creation in Fig. 55.

4.5 CONCLUSIONS

It can be concluded, from the analysis of the 50 models of co-creation, that indeed there are still various views on co-creation and its boundaries. The conclusion that Rosen *et al.* (2009), among others, drew about a lack of clarity and uniformity of co-creation can be confirmed.

The current views on co-creation differ most in that some see it as an open innovation movement and others as a participatory design method. This shows clearly in the meta-model of the 'spectrum of co-creation' but it also shows in the other three meta-models. In meta-model 2, ' the types of co-creation', it shows that some view co-creation as a set of different ways of creating with the customer and others view co-creation as a step in a design process that involves the customer. In all 4 meta-models, an attempt is made at incorporating both views. It is hoped that the meta-models can form a framework to classify existing research as well as define boundaries for upcoming projects. In the future, this should all contribute to the clarity, understanding and application of co-creation. Therefore, the models are once more repeated in Fig. 56 all together.

The differences aside, this article concludes with a definition of co-creation that applies on both the general view and the specific view, as well as the open-innovation and design perspective. This tentative definition is based on all articles cited but mostly on the works of Prahalad and Ramaswamy (2004), LSE Enterprise (2009), and Sanders and Stappers (2008).

> *Co-creation is the process of mutual firm-customer value creation. This facilitated (creative) process generates an active form of interaction and sharing between firm and end consumer, instead of the active firm, passive consumer interaction. One of the results of co-creation is that the contact between firm and customer moves away from transactional and becomes an experience.*
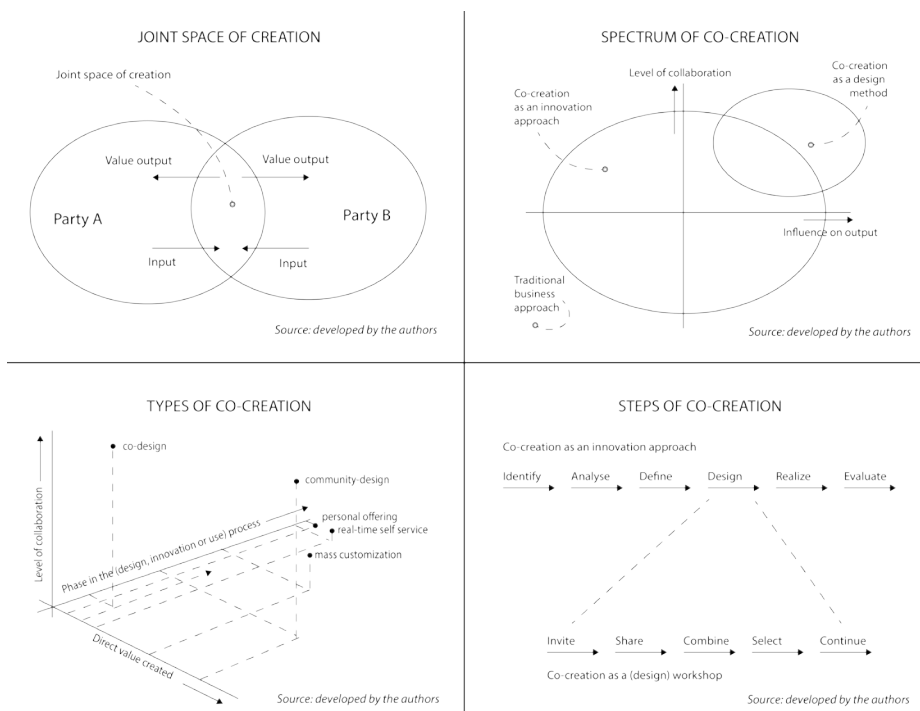
JOINT SPACE OF CREATION

Joint space of creation

Value output ← → Value output

Party A   Party B

Input   Input

Source: developed by the authors

SPECTRUM OF CO-CREATION

Level of collaboration

Co-creation as a design method

Co-creation as an innovation approach

Influence on output

Traditional business approach

Source: developed by the authors

TYPES OF CO-CREATION

Level of collaboration

• co-design

• community-design

• personal offering
• real-time self service

Phase in the (design, innovation or use) process

• mass customization

Direct value created

Source: developed by the authors

STEPS OF CO-CREATION

Co-creation as an innovation approach

Identify → Analyse → Define → Design → Realize → Evaluate

Invite → Share → Combine → Select → Continue

Co-creation as a (design) workshop

Source: developed by the authors

Figure 55. The four meta-models of
co-creation.

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Interlude IV: good food through Vietnamese eyes

A rather complete view of 'good' food through the eyes of a Vietnamese urban middle class consumer was formed; through the interviews, focus groups, the Get Green Vietnam program and the co-design workshops. Although these factors have not been specifically part of any study, they are interesting and show a rather complete perspective. This interlude gives an overview of these main findings on good food in Vietnam and how it relates to sustainable food consumption. (All the pictures are made during the research over the course of 1,5 years in Vietnam.)

Food choices are complex

In this research it was experienced that in Vietnam the consumers' food choice is complex and will get only more complex in the future. For food, people often said they were willing to spend some extra money on 'good' food, for their health and that of their children, and that they were motivated to change their consumption pattern towards a more sustainable one. The lack of availability, knowledge and a price premium were mentioned as barriers for sustainable food consumption.

However, the high motivation for health and safety makes that there are reasons to believe a market for sustainable food products and services in Vietnam can grow, mostly focused on food from 'good' sources: local, traditional or organic sources. Following an overview of the most important factors found.

Health, safety and fear

Health is often connected to security and safety. In Vietnam, the fear of 'unsafe' food was often heard as an argument for buying certain types of food or avoiding others. Food safety scares in the region make that consumers are looking for 'good' sources for food. Green, organic or natural sources are believed to be less receptive to these possible food scares such as the one with the Chinese milk powder in 2008. However, in Western countries fear also influences for example organic purchases. But, because of the comparatively low food safety standards, the factor of security and safety is stronger in Vietnam than in countries with high food safety standards.
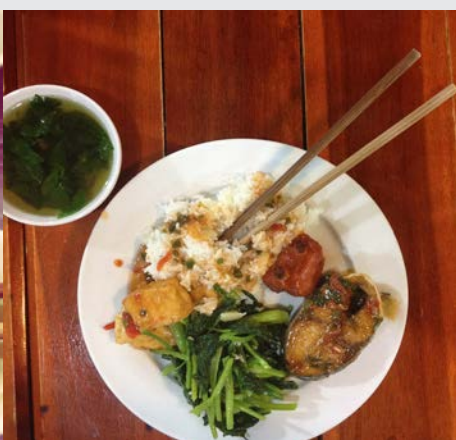
Safe food

An up rise of 'safe food' products is seen all across emerging Asia. In Vietnam this is particularly the case for families with young children. Some Vietnamese families in the studies had special lots of vegetables that they grew for their kids, to make sure the vegetables were safe. Others

bought premium or organic vegetables only for their young kids while eating regular vegetables themselves. In the interviews and workshops of chapters 2, 3 and 6, participants used words or terms such as fresh, safe, natural, nutritious, green, chemical free or traditional. These were often more familiar than the term sustainable for the Vietnamese but all came down to the same thing for them.

Freshness

Fear of chemicals, health and freshness are also connected to food safety. In Vietnam freshness is the key factor, and the best predictor of quality people said. This was shown for example in the workshops where the clear visibility of the expiry date was critical for people. When it was missing or not readable people always marked it as a point of improvement.

Convenience

Connected to freshness, convenience was another key factor. In urban Vietnam, most groceries for the family are still bought on the corner of their street. Market food stalls unfold every morning and the food for breakfast is bought in the early morning to make sure the ingredients are as fresh as can be. The same believe drives the lunch and dinner routines. Because freshness is such a key factor in the quality of food, ingredients need to be readily available three times a day, which makes that convenience becomes crucial too.

Chemical free

The factor of freshness also relates to the use of chemicals, in the form of preservatives, pesticides, fertilisers and so on. These are feared by the Vietnamese consumer and often regarded as a sign of a product not being fresh. However, it is a bit of a chicken and egg story in that it can also be because of the fear of chemicals that freshness highly appreciated. The fear of chemicals is roused by reports on diseases and toxicities of food in the media, all born out of a concern for health.

Money

Money is important in the food choices of the Vietnamese middle class. The average household spends half their income on food. Money was mentioned as a barrier for sustainable food consumption. However, people also indicated that they would be willing to spend more money

on 'good' food', especially for their children, if they would be able to find sources they trust.

Traditional and local firms

Traditional is an interesting factor in this enumeration of good food factors. Traditional in Vietnam refers to traditions of agriculture that were used before agricultural intensification took off and the use of pesticides and other chemicals became in vogue. The Vietnamese consumer tends to appreciate traditional and local agriculture firms, not only because of the ecological and sustainable point of view but also from a defensive localism point of view. An orientation on local food of the Vietnamese consumers is also a good base for the development of a more sustainable agriculture system stimulated by consumer demand.

Trust and personal relationships

Connected to all these factors is the factor of trust, between the one that sells the food and the one that buys the food. In Vietnam trust is established through close and personal relationships. This relationship guarantees the quality of freshness. Trust between families and their favourite market stall is built up over years and passed on to family and friends. This also makes that local food suppliers are beloved.

5. The value of co-design beyond new product ideas

ABSTRACT

For this study, 14 co-design workshops were executed between agro-food SMEs and customers. The workshops were organized to study and inspire product and service innovation as well human centred design. The workshops were built on the theme sustainable food consumption due to a rising concern among consumers and a willingness of companies to act upon this.

The workshops consisted of three basic parts: (1) feedback, (2) exploration and brainstorm and (3) concept making. These parts were preceded by a problem definition meeting with the company and research facilitator (subject of the study in chapter 3). A group of 8 experts facilitated, co-facilitated and co-organised the workshops. At each workshop 10-20 consumer participants were present, 2-5 employees of the company and 1-3 facilitators.

To understand if and how the companies valued and followed up on the outcomes as well as the methodology of co-design, an extensive evaluation session was held with each company within two weeks after the workshop and again 3 to 6 month after the workshop. Evaluation meetings were also organised with the facilitators after each set of 4 workshops and in the form of a final online evaluation 6 months after the last workshop.

The outcomes suggest that the co-design workshops were valuable for product and service innovation but much more so in creating customer understanding, triggering design thinking skills and a human centred approach. Companies were often not able to transform the workshop ideas into feasible or manageable product or service concepts for future development. It is argued that the lack of formal design skills and short-term planning made the contributions to product and service innovation less direct than expected.

The topic of sustainable food proved to be a welcome topic to open-up the dialogue between the consumer and the company. Insights between company and customer on this topic were mutually rich. This was especially the case between low and high sustainability focused customer and companies. These low-high combinations of companies and consumers in workshops were valuable for creating a sense of community and sense of urgency for sustainable food with the low-focused group, customer or company.

5.1 INTRODUCTION

This chapter reports on an initial exploration of co-design in Vietnam as a method for innovation during new product development (NPD). Sixteen collaborative co-design workshops between Vietnamese agro-food firms and urban middle class consumers have been executed. The goal of these workshops was to stimulate new product development for sustainable food behaviour among the urban middle class; by introducing and offering participatory design and innovation skills through facilitating a co-design workshop between the two parties.

5.1.1   THE POSSIBLE VALUE OF CO-DESIGN

Co-design is believed to have a whole range of values for new product development: increased number of ideas, different angles for ideas, access to a wider pool of ideas, better understanding of the user, reduced speed to market, reduced risk of innovation (Auh *et al.*, 2007; Damadoradan, 1996; Gulari *et al*., 2011; Mattelmaki & Sleeswijk-Visser, 2011; Roser *et al.*, 2009). Co-design is also believed to increase customer loyalty, provide greater consumer satisfaction, commitment and more positive word-of-mouth (Auh *et al.*, 2007; Bettencourt, 1997; Dong *et al.*, 2008; File *et al.*, 1992; Gulari *et al*., 2011; Payne & Frow 2005; Roser *et al.*, 2009). Some also see the value of co-design in improving creativity and increasing enthusiasm for innovations within the company (Roser *et al.*, 2009; Sandberg, 2012). The overall value of co-creation is often referred to as competitive advantage (Prahalad & Ramaswamy, 2002; Zhang & Chen, 2008). These values are desirable for all (consumer) companies, and especially for companies that face increasing competition in a growing consumer market. If a company could seize all these benefits, it would be able to offer a stronger product portfolio to a growing group of more loyal customers.

5.1.2   THE CASE OF THE AGRO-FOOD SMES IN VIETNAM

Local agro-food SMEs in Vietnam are facing increased competition from international players and the emerging middle class is growing at rapid speed. This raises the possibility for these companies to gain competitive advantage through co-design. If these local food companies do not innovate, do not improve their offerings and do not increase customer satisfaction,

they might not be able to withstand the international competition in the future and loose their market share. This is disagreeable for more than one reason: local agro-food companies can sustain local economic growth, local knowledge, are able to maintain Vietnamese traditions, and are able to understand and serve their Vietnamese customers best.

The previous research showed that Vietnamese agro-food firms tend to have rather low NPD, innovation and collaboration skills (De Koning *et al.*, 2016 - Part II chapter 3). The products and services of the companies are not able to fully address their customer's (food safety and sustainability) needs and desires. Among Vietnamese SMEs in other industries it was also found that they mostly compete on cost rather than on differentiating or investing in marketing due to a lack of formal design skills and little access to the market (Jin, 2015, p.9). Formal design skills are the multidisciplinary and systemic skills a designer needs to complete a design process; such as defining a design problem or design challenge, designing specifications, generating ideas, simulation and evaluation and decision making (Roozenburgh & Eekels, 1995).

Vietnamese local agro-food firms often have a small circle of customers that have been engaged through personal relationships. Companies regard the lack of a sufficient marketing budget, and not the lack of innovation or design skills, as the largest obstacle for expanding their market share (De Koning *et al.*, 2016 - Part II chapter 3). By introducing co-design to these companies, the aim is to introduce participatory or human centred design skills. Therefore possibly leapfrogging from low formal design skills to participatory design skills.

Another aspect to consider is that in the Vietnamese agro-food sector there are abundant reports on misconducts resulting in issues of food safety. Discovery of high amount of toxic substances, unhygienic production facilities or abuse of pesticides and fertilizers are frequently reported by local newspapers, radio and television or shared on social media. Some news headlines can be found in Fig. 60, these were found between 2015 and 2016 in Vietnamese local newspapers and international media. Previous research showed that because of these often reported issues with food safety; the Vietnamese urban middle class is interested and motivated to consume sustainable food products (De Koning *et al.*, 2015 - Part II chapter 1). However, consumers do not often engage in sustainable food consumption because they

Figure 60. Collection of news articles from local and international about food safety in Vietnam

do not know how to access or how to select (trustworthy) sustainable food sources. This is an opportunity the local food companies can tap into to gain competitive advantage. It also creates an interesting topic for the dialogue in co-design.

To conclude, the arrival of international players on the Vietnamese agro-food market makes it increasingly important for the local players to continuously improve serving their local customers. The Vietnamese customers are looking for more sustainable food sources but often did not find these sources yet. If the local food companies tap into this opportunity they may gain competitive advantage and sustain this in the future. Co-design between the local Vietnamese companies and the urban middle class consumers may aid the companies in seizing this opportunity. Co-design could stimulate innovation for the agro-food firms through collaboration and mutual exchange of information. Sustainability as a rising concern of both consumers and producers makes that the new field of sustainable food products in Vietnam serves as a good opportunity to test the assumption.

5.2   BACKGROUND

5.2.1   A CO-DESIGN WORKSHOP, A FORM OF CO-CREATION

Co-creation was already described in Part II Chapter 4, the concluding definition of the chapter is repeated here:

> *Co-creation is the process of mutual firm-customer value creation. This facilitated (creative) process generates an active form of interaction and sharing between firm and end consumer, instead of the active firm, passive consumer interaction. One of the results of co-creation is that the contact between firm and customer moves away from transactional and becomes an experience.*

In co-creation as a co-design workshop, ideas, input and feedback are generated that a company can use in their product innovation process. The details of the developed tool kit for the co-design workshop can be found in "2.6.5 The final co-design toolkit" on page 56. This tool-kit was used to execute the workshops for this study. If after a co-design workshop,

a company takes the results further (realise and evaluate), the created value for the customers will become apparent.

Co-design, was one of the five types of co-creation discussed in chapter 4. Personal offering, mass customization or real-time self service are lower collaborative forms and take place only in the end of the use or innovation process. These forms of co-creation require little input or effort from the users but as a consequence there is also limited influence on the customer understanding of the company, which is one of the goals for the SMEs in Vietnam. With co-design the customer can have actual influence on the whole product and not only parts or in the end. Community design on the other hand requires much more design effort of the customers. This would be an obstacle for users in Vietnam and second, in community design the companies would not collaborate on design with their customers. This makes that the company misses out on the thought process of customers designing, again creating less mutual understanding. So co-design was selected because it involves face-to-face interaction and it is possible to generate mutual understanding by mutual design input. So, in this chapter the focus is on co-creation as originated in the field of design: co-design. Co-design is often part of a larger Human Centred Design (HCD) process. The time-line of design history shows that HCD has its origins in participatory design. This design approach, sometimes dubbed the Scandinavian approach, emerged in the late 1960s and advocated user inclusion in the design process (Ehn, 2008). In the late 1980s participatory design shifted towards user-centred design. The book "The Psychology of Everyday things", a few years later revised as "The Design of Everyday things" by Donald Norman (1990) is often credited for establishing this movement. User centred design aims at improving the quality of interaction between user and product (Preece *et al.*, 2015; Vredenburg *et al.*, 2002; Wever *et al.*, 2008). In the late 1990s the process of involving the user became less technology driven and HCD started to evolve. Nowadays, Service Design and Design Thinking can also be added to the current terminology of design processes. These movements show a broader view on the human and social aspects of the design process that aims at creating user value. A form of co-creation has always been part of these movements, as structured ways of involving the end-user. Here, in this chapter's background, more detail is given on expected and intended value of co-creation and co-design workshops.

5.2.2 THE VALUE AND NATURE OF A CO-CREATION ACTIVITY

In this study the goal of the co-design workshops was mostly to create use / experience value and possibly societal value. The value of co-creation can be divided into three categories: monetary, use/experience or societal value (Sanders and Simons, 2009). Specifically for co-design workshops, the intended value is often either use/experience or societal value.

> *Co-creating monetary = fuelled by the desire to make money in new ways, more efficient ways, or in ways that provide revenues over longer periods of time (Sanders and Stappers, 2012, p26).*

> *Co-creating use / experience value = fuelled by companies' desire to transform consumers into users and so that the products and services they design, produce and sell will better meet people's wants and needs (Sanders and Stappers, 2012, p26).*

> *Co-creating societal value = fuelled by aspirations for longer-term and more sustainable ways of living (Sanders and Stappers, 2012, p26).*

To obtain values from co-creation a company must offer an enabling platform for regular people to take an active role (Manzini, 2007). Or, offer tools of conviviality (Illich, 1972) to give people the capability to engage with each other in creating new concepts and designs collaboratively (Sanders, 2006). This shows that the value that is sought after also influences the nature of the co-creation activity and the role of the user. This brings us to another division of co-creation according to the role of the user: informer, expert or creator (De Lille *et al.*, 2009; IDEO, 2015). These two categorizations, together with the previously discussed five types of co-creation, give a good overview of different ways to obtain different types of value from co-creation.

When co-creation is fuelled by monetary goals or to create monetary value, direct contact with customers is not always necessary (Fig. 61). The user is used as an informer. In this case, co-creation is often crowd-sourcing ideas from large-scale web-based surveys where customers can inform their preferences for features or indicate choices. Co-creation that seeks monetary value often requires lower levels of collaboration and lower levels of abstract thinking as input from the users. Therefore, this value does not really corroborate with a co-design workshop.

Monetary value can be seen as mostly gained from the types of co-creation of real-time self-

service, personal offering and mass customization (Fig 53, p.227 xx). These types are also mostly fuelled by efficiency (for both customer and company), which often results in monetary gain. However, an exact overlay of the five types of co-creation and the three values is not really possible because the approach of categorization is different. The five types of co-creation are categorized according to three axes, including the value for the user. The three types of value of co-creation on the other hand are categorized from a company's perspective of value. That put aside, the second and third value are can be associated with a co-design workshop.

When co-creation is fuelled by use or experience value not only products and services but also brands and branded environments are part of the solution space. The user is now in the role of expert of his or her own experiences. This value of co-creation requires higher levels of collaboration and a certain level of abstract thinking as input from the users, often this is done in the form of a co-design workshop. Sometimes however, co-design workshops can also have an even higher goal or envisioned value to obtain and that is societal value. Then it stretches to the third value: societal.

When co-creation is fuelled by societal value more open-ended questions are used and the outcome is less known beforehand. The user is then the creator of new ideas and solutions, facilitated by the company. The open-ended questions are often associated with the fuzzy-
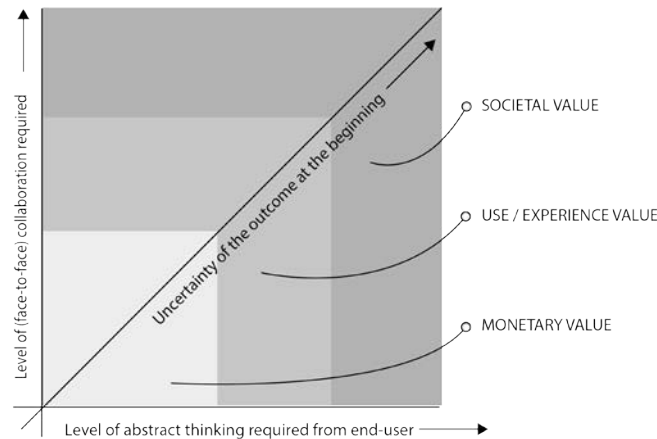

Figure 61. Three types of value of co-design (developed by Jotte de Koning, 2016).

front end of design, where high levels of face-to-face collaboration and high levels of abstract thinking are required as input from the users (Sanders & Simons, 2009).

In this study the goal of the co-design workshops was to create use / experience value and possibly societal value. Therefore the intended role of the user was between expert and creator. The possible societal value is created through the topic of engagement of sustainable food consumption. This corresponds to a broader societal and future challenge. The topic of sustainable food consumption could create a stimulus for both parties to engage with this topic more in daily life, and also possibly create ideas for more sustainable food consumption for Vietnam in the future. However, the concept of co-design is new for both the users and companies in the study, they are not experienced with this type of interaction. Therefore high levels of abstract thinking are not initially expected. Also, it is expected that the goal of use / experience value is more interesting and attractive for the companies as well as perceived more valuable.

5.2.3   BARRIERS AND MOTIVATIONS FOR CO-DESIGN

So far the story of co-design has been focused on the benefits and values. Reading that, one might wonder why not all companies are implementing co-design workshops as a regular item in their innovation or product development process. The first reason for the agro-food companies in Vietnam is simple: a lack of knowledge and skills to do so. Organising a co-design workshop requires specific skills, such as defining different roles, stepping in stepping out, and creating/providing the right tools at the right moment to the right people (Mattelmaki & Sleeswijk-Visser, 2011).

The complexity of the process also makes that often a lack of time is brought forward as a barrier for co-design (Kouprie & Sleeswijk Visser, 2009). This is also the reason of this study: to introduce co-design workshops to the companies in an active form, in order for them to gain knowledge and skills through learning-by-doing and with support to decrease the time investment from their side. Hopefully making the value of co-design clear so that in the future the companies will be willing to further develop the skills and knowledge and invest time.

In the field of co-creation, mostly in business-driven approaches, there is an idea that only

'lead' users can become co-designers (Von Hippel 2005; Seybold 2006). This suggests that the right people, or 'lead' users need to be found to co-design with. After the product has been co-design, non-lead users can test it. Not being able to find the lead-users can then be a barrier for employing co-design. In general, motivating customers to join co-design workshops is a barrier for companies because the direct value for the customers is rather low. Therefore it is not uncommon to provide a monetary compensation or product discount or offering in return for the participation.

There is another conviction in the field of co-creation and that is that everyone can be creative (Stappers and Sanders, 2012). This brings along the challenge of making people believe that everyone is creative. Prahalad and Ramaswamy (2004) consider this a main challenge in the diffusion of co-creation, they phrase it as the challenge of letting go of the company-centric view of value creation and changing the business system. Sanders and Stappers (2008) believe everyone can be creative and also see that companies are reluctant to employ co-design because it "threatens the existing power structures by requiring that control be relinquished and given to potential customers, consumers or end-users."

Whether one believes everyone is creative or that only lead-users can be creative, the new system will require product managers and product designers to transform their way of working, and move more towards a facilitating and listening role. The fear of some people to loose their job because of this change can also be a barrier for co-design. However, the traditional design professions will not disappear over-night (Buxton, 2007) and some even believe that designers will only become more important in the future (Sanders & Stappers, 2012).

To conclude, the main barriers for employing co-design are: a lack of co-design skills, a lack of co-design knowledge and a lack of time; not being able to find the right people or not being able to motivate the right people; not being able to change the current organizational system and opposition of a change in roles from people within organizations.

5.3 FIELD WORK SET-UP

5.3.1 THE WORKSHOPS

Table 14 gives an overview of the different elements in each of the 16 co-design workshops: the company, their product group, whether they are orientated towards sustainability, the participant group, and the innovation focus of the workshop (from the previous chapter). Workshop 1 and 2 represent the pilot studies. Code-names have been used to refer to the companies. The goal of the workshops was to stimulate innovation and new product development as well as presenting and transferring corresponding skills to the companies. Therefore, data collection was focused on the company and their perception of value of the outcomes and the co-design workshop itself.

5.3.2 TIME-LINE AND DATA COLLECTION METHOD

All 16 workshops, including the pilot workshops were executed between February 2014 and July 2015. The 2 pilot workshops (1 and 2) were executed in February 2014; the following 4 workshops (3 to 6) were executed in May and June 2014; workshops 7-10 were executed in October and November 2014; Workshops 11 and 12 were executed in January 2015; and workshops 13-16 were executed between May and July 2015.

A rough time-line of 8 weeks was developed for a single workshop, including preparation, organization and direct evaluation. Within these eight weeks data was collected on three different moments, three to six months after the workshops there were two more moments of data collection. This adds up to a total of five data collection moments (Fig. 62). Yellow circles represent data collection with companies; grey circles indicate data collection with experts; black circle indicate data collection with user participants. On pages 258-260 details for each of these five moments of data collection is given.

Co-design workshops are complex processes because different stakeholders are involved (together or alone) at different moments in time. This makes data collection equally complex and time-consuming. The focus was on personal interaction during face-to-face meetings.

Table 14. Elements and participants
of the co-design workshops

WORKSHOP NR.	COMPANY			CUSTOMERS
	NAME	PRODUCT	SUSTAINABILITY AS A CORE VALUE	GG (GGVN TRAINED) NT (NOT TRAINED)
1	Plantit	Vegetables	Yes	GG
2	Uncle Co	Kim Chi	No	GG
3	Dr Green	Vegetables	Yes	NT
4	Yellow Fish	Fish sauce	Yes	NT
5	Happy Farm	Vegetables	Yes	NT
6	Moringa	Tea	Yes	NT
7	Sang Tao	Coffee	No	GG
8	Golden Sun	Chicken	No	GG
9	White Silk	Porridge	No	GG
10	Don Dep	Clams	No	GG
11	Lang Life	Vegetables	Yes	GG
12	Dang Na	Mushrooms	No	GG
13	Arigato	Vegetables	Yes	NT
14	Oriental	Tea	Yes	NT
15	Rice Fever	Vegetables	Yes	GG
16	Sour Gai	Kim chi	No	GG

Several trials with online or paper communication and evaluation were executed but these resulted in short or shallow and even unanswered questions. Personal interviews resulted in discussion and deep understanding of the companies' evaluation of the results and process of the co-design workshop.

The workshop, the two expert evaluations and the two company evaluations were audio or video recorded, these were transcribed. In the transcriptions colour codes were used to highlight

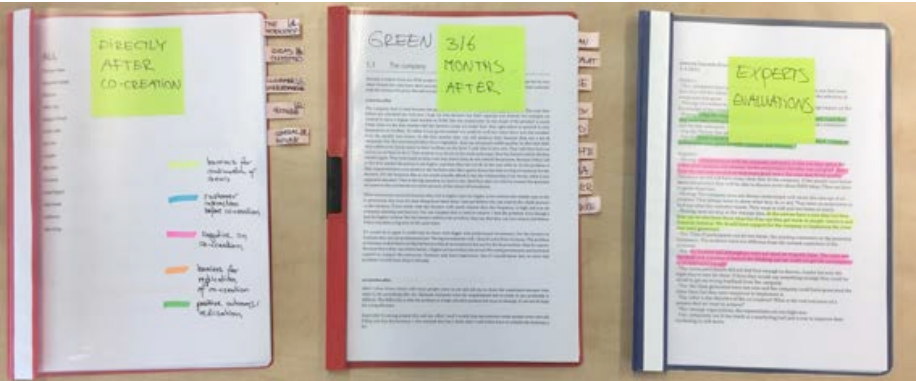Figure 62. Data collection moments for the
co-design workshops.

Figure 63. Before, during and after
transcriptions with colour coding of quotes.

quotes according to five themes (Fig. 63). The five themes were centred around the current interaction between company and customer, the perceived value of the co-design workshops and the perceived barriers and motivators for replicating the co-design methodology. These categorizations resulted in five themes for analysis:

1 Before: Existing company-customer relationship (blue)
2 Before: Existing channels of interaction (blue)
3 During: Interaction and the ideas for new products and services (green:
                   perceived value, and red: no perceived value)
4 After: Continuation of the product and service ideas (yellow)
5 After: Replication of co-design, barriers and motivators (orange)

DATA COLLECTION MOMENTS

1. During the workshop

The workshops were video-recorded and pictures were taken of all tangible outcomes such as the concept posters, brainstorms and post-it feedback on products. The video of the workshops were transcribed and translated. Also, the results of each workshop were captured in a report for each company. A summary of these reports can be found in the practical booklet that has been published: Co-design of Sustainable Food - In Vietnam (De Koning, 2016d).

Who: Company employees, 8-20 customers, 1 facilitator + 1-3 experts
Method: Workshop
How: Video recorded, photo recorded & transcribed
Language: Vietnamese with translation to English when necessary
Goal: Creative interaction and 2/5 concepts per workshop

2. Company Evaluation

The company evaluations were held in the week after the co-design workshop. A report of the results was made for each workshop and brought to the meeting to be able to discuss the outcomes of the workshop.

Who:	Company CEO, 1 or 2 employees, the facilitator + interviewer
Method:	In depth interview
How:	Audio recorded & transcribed
Language:	English with translation to Vietnamese when necessary
Goal:	Assessment of the workshop & outcomes

3. Expert Evaluation

After each cluster of 4 workshops an expert evaluation meeting was held with the experts that were present at those workshops. These meetings typically lasted between 1,5 to 2,5 hours and consisted of a lively discussion. The evaluation consisted of the assessment of the preparation phase, the company attitude, the process of the workshop, the outcomes and an in-between comparison of the 4 workshops on these topics.

Who:	The facilitator + 1 - 3 experts per workshop
Method:	In depth interview / discussion
How:	Audio recorded & transcribed
Language:	English
Goal:	Assessment of the workshop & outcomes

4. Company Evaluation 3-6 months after the workshops

The 3-6 months after evaluation (data collection moment 5) was only executed with 9 of the 14 companies and with 1 of the 2 pilot companies, so 10 in total. With 2 companies it did not work out to schedule a meeting anymore (one of the pilot companies and one of the fourteen companies). The last 4 co-design workshops were not executed yet and the opportunity to also evaluate these workshops in person was not presented due to limited opportunities of travelling back to Vietnam for this. The 9 company evaluation meetings were all held in person

because some trials with online feedback resulted in only short answers and not complete feedback. In person the results were much more in-depth, nuanced, complete and detailed.

The interview for each of these evaluation meetings was focused on 8 topics: (1) the company, (2) the customers, (3) the company-customer relationship, (4) the workshop preparation process, (5) the process during the workshop, (6) creativity, (7) the outcomes of the workshop, and (8) the co-design methodology and its repetition.

Who:	Company CEO, the facilitator + interviewer
Method:	In depth interview according to the workshop report
How:	Audio recorded & transcribed
Language:	English with translation to Vietnamese when necessary
Goal:	Assessment of follow up & continuation of the outcomes

5. Expert Evaluation 3-6 months after the workshops

The final expert evaluation was done in the form of an online survey: one for each workshop and one for co-design in general. The topics for the workshop surveys were: the assessment of the company on creativity and innovation; the assessment of the customers on creativity and knowledge; the assessment of the process on creativity, interaction and productiveness; and a rating of the outcomes on 8 topics. The general survey consisted of 14 statements on co-design; respondents could answer agree or disagree.

Who:	The facilitator + 2 - 4 experts for each workshop
Method:	Survey including photos of the outcomes
How:	Online
Language:	English
Goal:	Comparison of the workshops, outcomes and continuation

5.3.3 PILOT STUDIES

The activities within the co-design workshops and their order were established after two pilot studies. The main lesson learned from the pilot studies was that a concrete activity was needed to kick of the workshop. Starting with a more abstract question was too difficult and was drainage of energy and confidence with the participants. Starting with a feedback round on a tangible and specific object worked well but brought lower levels of abstraction. The lower level of abstraction made that goal of the value the shifted more towards use/experience value rather than societal value.

For the second part of the workshop, the pilot studies showed that more time and attention were required for the 'say' activities before people would feel comfortable in 'make' activities. Also, in the say activities several idea generator questions were added to make people think more 'outside the box' and to have more time to express their ideas. Next to that, the combination of the focus on a product and a sustainable behaviour required two separate say activities. Combining the two into one brainstorm activity was too complex and made people afraid to be 'wrong' about a subject.

Last, the pilot studies showed that more time was needed for individual expression as well as equal opportunities for everyone to present and talk. Therefore more presentation time was organized into the schedule of the co-design workshop to make sure that everyone could have their say. Practically, this meant that the time scheduled for the workshops was 3,5 hours rather than 2,5 and the more abstract questions were minimized and scheduled towards the middle and end of the workshop.

5.3.4 THE COMPANIES

The focus was on local companies, first of all because previous studies showed that the consumers had an ambiguous relationship with the local agro-food producers: the companies were viewed as both highly trustworthy as well as highly untrustworthy. Second, because the local producers are closest to the consumers (geographically and culturally). Third, because of pragmatic reasons: having good access to local companies from the agro-food industry in Vietnam.

Over 30 SME's were contacted one or multiple times with the question if they were interested in organising a co-design workshop for sustainable food behaviour. The selection of what companies to approach was based on varieties in product category (vegetables and fruits, meat and fish, coffee and tea or processed food products); their willingness to innovate; their focus on the consumers of the Vietnamese middle class; and a good mix of both sustainability centred SME's and sustainability aspiring SME's. In other words: companies that had sustainability as one of their core values of their business and ones that aspired to incorporate sustainability into their values.

The initial contact with SMEs was established by e-mail or phone and through the network of the projects GetGreen and Sustainable Product InnovatioN (SPIN). Of the more than 30 SMEs contacted, 20 SMEs agreed on a problem definition meeting. In the end, including the pilot studies, 16 co-design workshops were organised. The preparation process was discontinued with 2 SMEs because their focus and interest turned out to be not on the urban middle class of Vietnam. With 2 other SMEs the process was discontinued due to not being able to align the planning. The number of workshops was rather high because co-design workshops are influenced by many different factors and also contextual factors that cannot easily be manipulated. However, the last set of four workshops demonstrated mostly repetitive results from the previous ones. This showed that a general and consistent view on the value of co-design workshops could be formed.

The SMEs were based in North (3), South (9) and Central (2) Vietnam. The companies have been kept anonymous and alternative company names are used. The cases 1 and 2 represent the pilot cases.

5.3.5 THE PARTICIPANTS

In each workshop between 8 and 20 customers participated. The participants for the workshops were recruited from the company's customers or the GGVN participant network. This resulted in two different type of groups: consumer groups that were very knowledgeable about sustainable consumption through the training of GGVN and consumers that were not particularly knowledgeable about sustainable consumption.

The participants were invited for a half-day workshop with a specific company. Participants from the company network were invited directly by the company; participants from the GGVN groups were invited by their GGVN group leader. All participants were part of the urban middle class of Vietnam and between the age of 18 and 55.

A week before the workshop an e-mail or letter was sent with: information about the workshop; a short introduction about the company; and a sensitizing exercise for sustainable food behaviour. This sensitizing exercise was specific for the sustainable behaviour chosen for the workshop. For example when the focus was on packaging waste for a coffee company, participants were asked to count the number of disposable coffee cups they used in the 3 days before the workshop.

5.3.6   THE EXPERTS

The experts consisted of a group nine people: three main facilitators and six co-facilitators or organisers. For each workshop one main facilitator and at least one, but up to three, co-facilitators or organisers were present. The three main facilitators, a German woman, a Dutch woman and a Vietnamese man, were selected for their experience in the field of sustainable consumption and organizing workshops. They all had a design background. The six co-facilitators or organisers were selected from the Vietnamese staff of the GGVN project. They were selected for their experience with workshops in general and their communication skills. They had diverse backgrounds ranging from communication studies to English to sustainable management. All of these experts were women in their twenties and early thirties. (For Vietnamese standards this quite mature, the average age of the population is 25 years old.)

5.4   RESULTS

Table 15 shows a summary of the results on the five identified themes. A '+' indicates a slight positive change was noticed and a double '++' indicates that a substantial positive change was noticed from what the companies and experts remarked during the interviews. The '0'

Table 15. Summary of the results
on five themes of each co-design
workshop.

THEME		1 & 2	2	3	3	4	5
		BEFORE THE WORKSHOP		THE WORKSHOP		AFTER THE WORKSHOP	
Period	Company name	relationship for customer feedback	channels for customer interaction	New product ideas gained	Customer understanding	Continuation of ideas	Continuation of workshop methodology
Pilots Winter 2014	Plantit	Friends & family	Conversation	0	+	NA	NA
	Uncle Co	Others	Survey, test panel	+	0	NA	NA
Spring 2014	Dr Green	Existing customers	In the store	+	+	+	0
	Yellow Fish	Friends & family	Fairs, Facebook	+	+	+	+
	Happy Farm	Friends & family	Phone / e-mail	+	+ +	+	+
	Moringa	Friends & family	At the farm	++	+ +	+	+ +
Fall 2014	Sang Tao	Others	Survey, test panel, Facebook	+	+ +	+	+
	Golden Sun	Existing customers	Survey, Fairs	0	+	0	0
	White Silk	Others	Survey	++	+ +	+	+ +
	Don Dep	Friends & family	Fairs	0	+	0	+ +
Winter 2015	Lang Life	Existing customers	At the farm	0	+ +	0	+ +
	Dang Na	Friends & family	Conversation	0	0	NA	NA
Spring 2015	Arigato	Friends & family	Conversation	0	+	NA	NA
	Oriental	Friends & family	Conversation	+	+ +	NA	NA
	Rice Fever	Existing customers	In store	+	+	NA	NA
	Sour Gai	Existing customers	Survey	0	+	NA	NA

indicates no change was noticed nor remarked by the companies or experts. The indication 'NA' stands for Not Applicable. These are the companies that were not contacted after the workshops because the timing for the 3-6 month after meetings did not align with the research.

The results show the outcomes of an initial exploration of co-design in Vietnam as a method for human centred innovation in new product development (NPD) in the agro-food industry. The results are based on 14 co-design workshops and interviews with participating stakeholders before, directly after and 3-6 months after the workshop. Quotes from these interviews are used to illustrate the results.

5.4.1   (1) BEFORE - EXISTING RELATIONSHIP

The relationship between the Vietnamese agro-food companies and their Vietnamese consumers is often determined by trust established through personal connections. The news reports on issues with food safety have caused the Vietnamese agro-food industry and their claims of quality with words such as 'safety' or 'natural' to be received with scepticism. Also, the reports are so numerous that many customers do not know who to believe anymore and only trust personal connections.

Therefore, companies were solving (or are trying to solve) the trust issues between customer and company by building long lasting and personal relationships. Often this was done by organizing farm visits that enable personal interaction and for consumers to see the companies' 'good conduct' with their own eyes. Broadening their customer circle happens mostly through friends and family and through word-of-mouth promotion. The direct and personal interaction at the farm and brand awareness through word-of-mouth were also seen as most effective to strengthen the relationship with people to make them loyal customers.

5.4.2   (2) BEFORE - CHANNELS OF INTERACTION

Besides farm visits, companies apply little structured or planned interaction with customers. If so, it is in the form of a survey. This is because this methods is seen as low effort and low cost. Companies realize however that there is only room feedback and yes/no answers and not so much room for elaboration. Some companies also invite users for a test panel or they ask for

SELECTED QUOTES FROM THE DATA

(1) BEFORE - EXISTING RELATIONSHIP

Trust & Personal relationships are important

- *One person (company) says this is the truth and the other one says it is the other truth, so the customer cannot know (Dr Green)*
- *We needed time to build that trust. Every time people had a question about the products they could ask and we would answer in the way we think they trust. (Plantit)*
- *By the time we existed for three years we had customers that build the believe by themselves, not from our speaking but from experience. From friend to friend and from family to family. (Plantit).*
- *We talk to our customer and if they have time we invite them to our farm. There they can see how we work, how we process and how we work with our staff. That way they can understand it. (Dr Green)*

(2) BEFORE - CHANNELS OF INTERACTION

Little feedback or input from the customer currently

- *We did surveys before, to know what the customers think so when you said it was not going to be a survey, you made me surprised. (White Silk)*
- *Not much, but on fairs we try to get feedback when we promote our product (Arigato)*
- *I have a lot of friends that are my customers but they are biased and wont say the truth because they are my friends. (Oriental)*
- *Before we did not focus much on the customer, we only focused on getting product and production perfect. (Happy Farm)*
- *We have basically not asked the customer what they are thinking or their perspective of the company. We just place ourselves in the shoes of the customer and we think the way they are thinking (Sang Tao)*

(3) DURING - THE (PERCEIVED) VALUE OF THE WORKSHOPS

Confirmation and direction rather than new ideas

- *Even though the new bottle is not a very new idea, the co-creation helped us understand more how important the outside of the product is (Yellow Fish).*
- *There was an idea I already had that was now reinforced because of the co-creation. They were a bit stuck but now they got more energy to do it again (White Silk)*

feedback during promotional activities.

Other interactions are informal and unstructured through direct contact, phone, e-mail or social media. The relationships for these informal interactions were often through friendships and personal relationships or social media. The companies mentioned that one of the downsides of these personal and friendly relationships was that friends do not always dare to be negative.

On the other hand, it was also not always believed that direct input of the user in the (new) product development was needed; because companies could envision being a user themselves or prioritizing making the product technically perfect them selves. Along the same line, many of the companies believed that the product needed to be perfect, and then the customers would come automatically. Therefore these companies did not focus much on getting feedback of the customers

Some companies recognized the need of understanding the customer and connecting with them. However they did not directly involved the customers in the product development process but rather imagined how customers would feel.

5.4.3   (3) DURING - THE (PERCEIVED) VALUE OF THE WORKSHOPS

The co-design workshops did result in several product ideas, some new product ideas and some that the company had thought of before. The already existing ideas were a stimulation and confirmation that the company had to continue with those ideas. More so, it stimulated companies to reconnect with existing ideas and not give up on these existing ideas. Or, it helped focusing on parts of the product or company that did not receive much attention before, such as the packaging of a product or the environmental aspect of the product.

The feedback on current products was often seen as very valuable because it was concrete, positive and constructive. This was part of the first activity of the workshop. Because it was so concrete, it was seen as a good starting point for the co-design workshop.

For the rest of the workshop, concrete and tangible were also what the experts mentioned as being important for a good co-design workshop. Packaging was considered the most tangible

- *We under evaluated the environmental factor. Before we only thought about our production, packaging and saving. Now I also think about the consumer. We can use it more, in our brand story, or we can sponsor things or encourage people with messages on our packaging (Sang Tao)*

Concrete topics were preferred

- *We like the 'like' and 'dislike' exercise the best because that is feedback on our current product and tells us exactly what to focus on (Golden Sun)*
- *If you give a big question from the beginning people will block. (Lang Life)*
- *Packaging ideas were much more concrete so it was a nicer working process. (expert Anna)*
- *The topic of packaging brings the most direct feasible benefit to the company. The benefit with other products like calendar or seasonal food is less clear for the company. (expert Thu)*
- *Example: it now says on our packaging 'no chemicals' but when we say 'once you open it, use all at once' it is more convincing that there are no chemicals (White Silk).*

Companies liked the open, social and active form of interaction

- *Participants were interested and open to share, in comparison with other sessions users are normally scared to share and not so open (White Silk)*
- *With co-creation people can talk and discuss directly, writing is sometimes hard for people. People can say also more than in a survey (Moringa)*
- *The way they gave feedback, it was more sharing and understanding. Other times they were more negative (Happy Farm).*
- *To me the most important is to give the right question for the workshop that makes the participants interested and excited as well as to create the open and friendly atmosphere for them. Something fun during the workshop is also needed. (Don Dep)*
- *We need to make the activity interesting and fun. We need to write a letter to the local authorities to get their support. Then we need to call all our friends to discuss how to do it. (Lang Life)*

Educational value for both customers and employees

- *Customers learned about organic foods, how it is processed and how to cook these foods in the right way (Happy Farm)*
- *Users learned how to store their product best at home in the best conditions (White Silk)*
- *Consumers also asked for more information after the workshop (Sang Tao)*
- *The sustainability component gives a positive effect and a wake-up call also for participants, because the companies get surprised with what customers know (Expert Anna)*
- *Our staff also learned a lot because they work with the organic and then our staff could talk to a lot of people. They understand about the organic better now (Dr. Green)*
- *The staff did not pay much attention to the customer ideas because they were focused on their own ideas they already had before (Moringa)*

topic. It contains information people can react on and it is a visual part of product that easily provokes feedback and creativity. The experts said and experienced that those co-design workshops that focused on the packaging of the companies, often brought higher direct value than those focusing on other aspects of the company.

However, most positive experiences and new insights were gained from the type of interaction one could have with the customers. The interaction approach of co-design was thought to be positive because of the equal hierarchy of participants, there was no dominance; the open nature of the discussions; and the effort people made to give valuable feedback and not just 'tick of' some boxes. Overall, co-design was seen as a very insightful process and a valuable lesson for the company of how one could interact and connect with customers in a different way.

Besides product innovation or product development and customer understanding, there were two other positive effects found, that were not expected before: an educational effect for the customer and an education effect for the company staff. Customers enjoyed learning about production techniques and sustainability. The sustainability aspect of the workshops was educational for the customers and very much appreciated. This was also a reason for them to join: to learn about the production of food and sustainability.

For the staff that participated there was also an educational effect: they felt more confident about their knowledge now but also for many it was a good way to express their ideas on an equal level and maybe outside of their expertise area without being judged or not taken seriously. This also sometimes had a negative effect because then they would be too focused on their own ideas, finally having a platform to express them.

Most negative comments were on organizational side and preparation phase, such as amount of people being late or the room being too hot and not having a detailed action plan. This shows that conditions and context that co-design takes place in are really very important. Also, the companies were not used to a process like this so they felt somewhat unprepared. After they participated in the workshop they felt the preparation could have been better. A last comments was on the type of participants. Some companies would prefer participants to be all the ones that do the actual grocery shopping for the household.

Preparation, location and customer selection are important

- *Some participants did not come in time, maybe we need walk-in time (Happy Farm)*
- *Location and atmosphere were not ideal: the room was too small. This somehow limited thinking and we could not get all participants motivated enough. (Expert Thu)*
- *Preparation was not clear, participants did not know what to expect. A clear agenda, lesson plan, lessons learned and invitation letter are needed. Then they will also be more willing to join (Oriental)*
- *For food we need more married people because they buy the food (White Silk)*

Pitfall

- *The company does not always completely understand about the concept of co-creation. Then they want to show what they do or did. They have no motivation to find out what the customer wants. They want to talk and not listen so much (Expert Phuong)*

(4) AFTER - CONTINUATION OF IDEAS

Some companies Continued with the ideas of the workshop

- *We developed a smaller bottle. This one looks more like the traditional shape as we talked about in the co-creation workshop but this one is actually more my idea that I already had. We ordered this standard bottle shape now because making one is too expensive. (Yellow Fish)*
- *Yes, we changed the website. We use another database and another code that will be easier for the customers to look at on their smartphone (Dr Green)*
- *We tried to make a leaflet to introduce more information to the customer (Dr Green)*
- *I choose another designer now because when he had an idea it was very difficult to change his idea. When I received your document I closed everything and I though a lot. I send this document to a friend and another designer, we discussed it online. After we met together and the idea of the unified changeable label came about. So I think this document is very good. (Moringa)*

Others were too busy, had no money or did not know how

- *Next year I will have time when I move back to Dalat and make a catalogue like the seasonal calendar, yes a nice idea that we will come back to (Dr Green)*
- *We did not improve our packaging because it takes a big investment in packaging machine and materials and we are just beginning the production and sales (Don Dep)*
- *Yes, interesting ideas but now the big question is how to do it? (Moringa)*
- *There were a lot of ideas from the customers, so many, how do we know what to focus on to improve? What point is most important, we do not know? (White Silk)*

The experts thought that a pitfall for the companies was that the companies would regard co-design more as a marketing or promotional activity. Therefore the companies would listen less to the customers and talk more. Also resulting in defending the product instead of listening to the feedback of the customers. This was remarked already during the pilot studies and therefore a more restricted format for the company presentation was built in. However, sometimes this remained a pitfall.

5.4.4 (4) AFTER - CONTINUATION OF IDEAS

After the co-design workshop ideas did stick with companies and some continued with them: two companies ordered a different type of packaging similar to the ideas in the co-design workshop; three companies changed their website and website information after the co-design workshops; one company continued with a flavour that was tested during the workshop; another company sought collaboration with a nutrition centre as also suggested during the workshop; yet another company fired their designer because he did not want input from users, then they hired a new designer to develop a packaging based on the results of the co-design workshop, and he did; another one of the companies developed a special gift package for New Years similar to one of the final ideas during the co-design workshop. However, not all companies admitted or were clear about where the idea came from.

Other companies had difficulties continuing with the ideas after the co-design workshop because they felt ideas were not feasible due to timing or investment. The said they were too busy to implement the ideas right now and would do it later. Or, that they would do it later because now they still had products in stock, so they needed to wait until those were finished. Continuing with the ideas from the workshop was also considered difficult because ideas were not always regarded feasible or implementable for the company. And last, an often heard argument was that it was also difficult to continue because companies did not know how to continue or with which idea to continue first.

5.4.5 (5) AFTER - REPLICATION OF CO-DESIGN, BARRIERS AND MOTIVATORS

This last category of results is maybe one of the most important ones. This is about whether

(5) AFTER - REPLICATION OF CO-DESIGN, BARRIERS AND MOTIVATORS

Almost all companies wanted and felt confident to replicate

- *We want to do this, of course, once every 3 months. We want to invite housewives; we did that once already through our friend's mouth to mouth and mostly Facebook (Lang Life)*
- *I would like to do it again for our washing detergents and then with new customers. Ones that do not know the company yet. Now 60% are family and friends and I would prefer to get ideas from different / new customers (Moringa)*
- *We can set up a workshop on our own because we learned from you now, I already have some ideas for it (Oriental)*
- *With the methodology we learned from the co-creation workshop we can do a similar workshop to improve various problems of our factory (Don Dep)*

Some companies indeed replicated co-design

- *I have used it in meetings and workshops to solve various problems in the factory, not only on the quality of the fresh calm but also on how to develop them for HCMC (Don Dep)*
- *We already did one day for the people from the slow-food Facebook page and we only had pace for 100 people but 300 wanted to come! (Lang Life)*
- *After the workshop we invited the sales teams of the three distribution centres. We divided them into three groups and first they were surprised and passive. They wait and wait. After we introduced co-creation. Then they discussed dynamic, wow, very good (White Silk*

Some wanted to combine co-design activities with other activities

- *We will combine this way to get feedback with a traditional survey (White Silk)*
- *If we have a group like this again we can give a questionnaire and test the product. Then we can see what they think about the flavour and packaging and then we can have a discussion after (Sang Tao).*

Some needed more information

- *I need a detailed guide of how to do it (Moringa)*
- *We would like to know how to do it for a NEW product (White Silk)*
- *Now Mrs Than does not work at White Silk anymore so I have to train a new staff member in co-creation, the methodology booklet (Part III) will help but it is difficult to find a new staff member. (White Silk)*

The most difficult was thought to be attracting (the right) customers

- *How can we make co-creation attract more customers? (Yellow Fish)*
- *We need to know how to select the right consumer groups and the right information for the customers (White Silk)*

companies want to and will replicate co-design in the future. If yes, companies have understood the value of it and innovation and more human centred design might follow from future co-design workshops.

In general companies were enthusiastic and wanted to continue with a form of co-design They wanted to invite customers more often and ask for more feedback in less traditional ways than surveys and test panels. Some of the companies already organized a co-design workshop on their own. Other companies had ideas about replicating the methodology in a way that was a mix between the 'old' and 'new' way of connecting and receiving feedback or input from customers. They planned to do a test panel combined with a discussion or a survey with a discussion after to get deeper insights.

Others also said they now felt confident to do so because they had seen and experienced how co-design works. In the final online evaluation, none of the experts also thought that companies would not repeat the methodology because they did not know how to do it. This is also because after the workshops most of the companies asked for a detailed methodology guide of 'how to do it'. This guide booklet was made and given to them. The companies said it would help them to train others and repeat the methodology. The final version of this methodology booklet, including some background and the examples of the 16 cases, can be found online with the titel "Co-design and sustainable food in Vietnam".

The last part of these results are the barriers that remained. The main barrier for organizing another co-design workshop was finding enough (and the right) consumers and interesting them to join. One of the companies tried to organize a co-design workshop again but for them it was hard to find consumers that would make time to join. Lack of money and time were also heard a lot as barriers for replication of the co-design workshop methodology. Among the experts, being 'too busy with other work' was seen as the main barrier for the companies to replicate co-design, however, none of the experts thought that 'not having the money to do co-design' was a barrier for replication.

- *It will be difficult to find diverse participants. I have a lot of customers that are my friends. They are biased and will not say the truth because they are my friends. (Oriental)*
- *The end-users always say they are busy and have no time. It is not about money, we pay them, also for transport, and we only make it two hours. When we ask them to come, they say yes. Then on Friday we call and they say I am very busy sorry, sorry. (White Silk)*

Other barriers were costs and time

- *I am also worried about the costs of co-creation because we need money for logistics, preparation, and finding the groups. (White Silk)*
- *It depends on director and vice director of R&D. And they also think co-creation is very good but they are very busy. (White Silk)*
- *I want to do it again but only if I can arrange the time, because I do not want to do a co-creation workshop that was not well prepared (Happy Farm)*

Figure 64. Participants presenting their final concepts during the workshops.
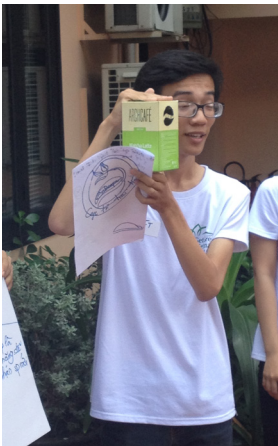
5.5   REFLECTION ON THE CO-DESIGN METHOD

The method of co-design showed to be effective as well as the learning-by-doing approach of transferring the co-design method to the SMEs. After the co-design workshops most companies were confident to be able to replicate the method. However, before the details of the resulting benefits of co-design are discussed, a reflection on the developed method is presented in the first paragraph of this discussion.

Feasibility of ideas

Although the feedback on the products as well as understanding the desires of the customers through an active form of interaction was highly appreciated, many of the companies did not think that the ideas were feasible to continue with. This could indicate that the level of creativity exceeded boundaries of reality or that the boundaries were too loose. However, it is suggested that the cause must be sought in the design skills of the companies. Companies lack skills to transform imaginary ideas and maybe infeasible ideas into feasible ones. This is probably due to a lack of design thinking skills or formal design skills. Therefore the first recommendations for the co-design workshops is to have a designer involved in the workshop that can also help translating the ideas and wishes of the customers into goals and feasible products or improvements for the company.

Fun is important

A loose atmosphere was created through games, together with playful tools and a neutral setting; this flattened the hierarchy. Therefore we did not find hierarchy to be a big problem, if carefully managed. Many people commented that they felt completely free to say anything and that there were no dominant people in the room. This was also often remarked as positive in evaluations of the workshops. Overall, like Van Rijn *et al.* (2006) we had expected "participants to be reserved and cautious in their presentations, but they surprised us by inventive and enthusiastic ways of presenting."

Preparation and sensitizing

The developed co-design method was based on literature and tested in Vietnam with two

pilot workshops. The companies all said that the method was well adapted to the context of Vietnam. However, the most requested improvement was to have more intense and better preparation for the workshop; as well as a more clear structure of what was going to happen presented to them and the customers. Therefore the final methodology booklet focuses a great deal of the content on preparation and providing structure.

A sensitizing period could help but for some of the workshops a sensitizing booklet was used to prepare the participants and it did not work as anticipated. Participants had very low motivations to engage in a sensitizing period before the workshop. They often did not look into the booklet that was send or given to them. During the workshop they sometimes wanted to fill in the booklet together with the other participants. This could indicate that the individual nature of the sensitizing booklet before the workshops might have put too much pressure on them. It could also indicate that people did not feel much involvement before the workshop or that they just did not see the importance of it. In our research the use of sensitizing booklets has not been successful and therefore discontinued. However, we suggest future research looks into a right method and period of sensitizing Vietnamese customers for a co-design workshop.

Societal value and open-ended questions

The value intended to reach was experience / use as well as social value. The social value was reached in a way of understanding and motivation to continue with the topic of sustainability after the workshops. However, ideas that were generated were not often built on creating social value for Vietnam. The open-ended nature of societal questions as well as the magnitude of the problem did not work in these groups, as was shown in the pilot studies. People felt more

Figure 65. Participants engaging in an ice-breaking exercise the 'human knot'.

restrained because it was not clear what was expected from them, creating a fear of doing it wrong. This confirms that control, in the form of boundaries and structure are important for co-design workshops in Vietnam.

Structure might sounds contradictory to creativity. However, with the metaphor of a blank piece of paper it is easy to understand. It is harder to start a drawing on a blank piece of paper is very than starting to draw on a piece of paper that already has some lines on it or to start drawing with a specific assignment, to draw a cat for example. However, when you tell someone to draw a cat, you will probably not get a dog. The balance between the completely blank paper without any assignment of what to draw and a pre-defined colouring picture for co-design needs to be further researched. There are reasons to believe that in Vietnam more boundaries are needed at first and then people will draw outside the lines.

Van Rijn *et al.* (2006) stated that context mapping techniques may work differently in East Asia and may need to be adapted. The reasons they mentioned are that Asians feel uneasy when they are asked to "express a personal opinion, to volunteer an interpretation to an ambiguous question, or to react to the statements of others" (Van Rijn *et al.* 2006, p.158). This corresponds to what we found in our study, for people to answer and volunteer to interpret an ambiguous question was definitely a hurdle to overcome. However, in our research, personal opinion, interpretation or reacting to others did not prove to be a problem. Personal opinions were often expressed and people reacted on each other in discussions, also if they did not agree with each other.

Path of expression and practice theory

Connected to difficulties with open-ended questions and ambiguity are the use of practice theory and expression on the path of expression. Practice theory was useful in defining what the goal was of the co-design workshops in advance. The questions were not always successful in eliciting the skills and images because they were too ambiguous. A comparable result was found in the use of the path of expression. People tended to not go too far back and not look too far into the future. If they would do that, it was like going into a state of mind with too many open ends and possibilities and therefore too much ambiguity.

To summarize

- Starting with a round of feedback on products worked well, because this was seen as valuable for the companies as well as a concrete and non ambiguous task for the customers

- The make-activities created an active form of interaction that was highly appreciated by the company and the participants

- The method was well adapted to Vietnamese context: fun, flat hierarchy and an active form with enough time for everyone to express their ideas and opinions

- Ambiguity and too open-ended questions were difficult for the participants. This also made that the path of expression was completed, but not very extensive, only briefly into the past and briefly into the future

- More preparation activities and structure before the workshops was preferred, both for the company and the customers

- In order for the generated ideas to have more effect down the line and be taken further within the company, design thinking skills should be offered in the after-care process

- High social value reached was reached through the topic of sustainable food consumption

- Social value of generated ideas was low, the ideas were more in the use/experience value spectrum

5.6   DISCUSSION AND CONCLUSION

In the introduction it was stated that the agro-food SMEs in Vietnam tend to have low design, NPD or innovation skills as well as connection to the market. On top of that, they are facing increased competition from international players and their position is threatened by a rising concern of food safety among their urban middle class customers. Since co-design is believed to be able to inspire new product development and strengthen the competitive advantage of companies, workshops around the theme of sustainable food and NPD were organized with 16 agro-food companies.

The goal of the workshops was to stimulate new product and service development for sustainable food behaviour among the urban middle class; by introducing and offering participatory design and innovation skills through facilitating a co-design workshop between the two parties.

It can be concluded that all companies received the participatory design skills used in the co-design workshops with enthusiasm; many replicated these skills; some companies were stimulated to innovate towards more sustainable products and services; and a few new products were developed. The perceived main value was customer connection, trust, loyalty and understanding. This demonstrates that the developed method achieved the results. However, some results were achieved to a greater extend than others, this will be the subject of this discussion section.

5.6.1   VALUE OF CO-DESIGN FOR PRODUCTS AND SERVICES

One of the goals of the workshop was to leapfrog in the evolution of design skills in Vietnam, and jump from 'making skills', to 'participatory design skills', while skipping the step of 'formal or traditional design process skills'. This would enable the maker-employees of the SMEs to

DIRECT BENEFIT

| THE COMPANY | THE PARTICIPATING EMPLOYEES | THE PARTICIPATING CUSTOMERS | ALL COMPANY CUSTOMERS |

Input for New Product Develoment, Marketing, Branding & Innovation

Design skills, a platform to express ideas Renewed energy for existing projects Confidence about own knowledge

Knowledge on production, knowledge on sustainability, trust, meeting like minded people & feeling of being heard

When ideas are implemented: Products and services better adapted to their needs & desires

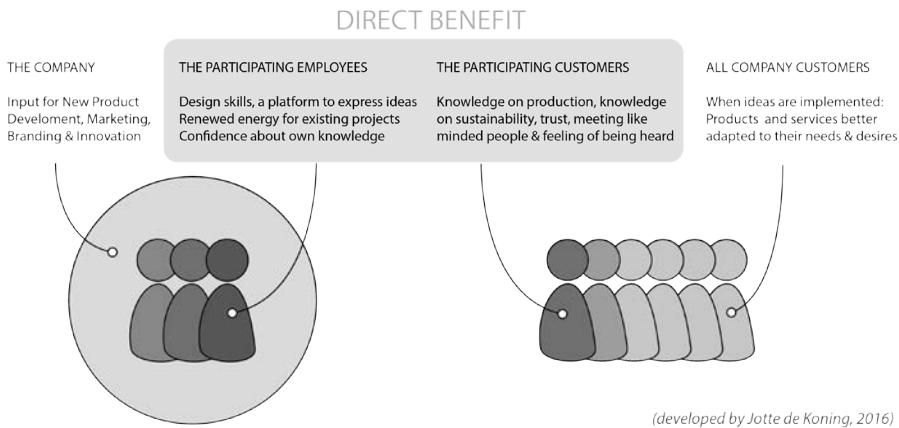*(developed by Jotte de Koning, 2016)*

Figure 66. Beneficiaries of co-design for sustainable food

be facilitators of the make process for users, without going through the process of having to learn formal design skills first.

The design and innovation skills were transferred through the co-design workshop, but these skills were not always corroborated by the results of new product development after. The companies said that this was because of the low feasibility or innovativeness of the ideas. While this is partly true, the ideas were not extremely new or always feasible, a second explanation paints the rest of the picture. Companies did not know how to take the ideas further or how to translate them into feasible ideas because of their low formal design skills (design translation of user needs). In the workshops the goal was to place companies in the role of the co-design researcher but often the companies needed 'us' (the design researchers) to take that role. Some companies even expected a traditional 'design researcher-role' from 'us': to tell them how to use and finally design the brainstormed ideas. This shows that formal design skills are low and still need to be developed to fully enjoy the NPD benefits form the co-design workshops in the future.

Therefore, leapfrogging from 'making skills' to 'participatory design skills' (facilitating people's expression of creativity) proved to be difficult. However, an increase in design and innovation skills was experienced and positively valued by the company after the workshops. This shows that there is new product design value for the agro-food companies in from co-design workshops, but rather in the transferral of skills and the stimulation of innovation than the origination of actual new product ideas. It is concluded that the step of formal design skills is necessary in the evolution of design in Vietnam, but that this evolutionary process could be accelerated by co-design. The lack of the formal design skills make that the direct benefits of co-design are less tangible and most apparent in intangible results for direct participants (Fig. 67).

5.6.2   VALUE OF CO-DESIGN FOR SUSTAINABLE CONSUMPTION

A second goal of the workshop was to increase customer understanding and to build trust around the topic of sustainable food consumption. For this goal the co-design workshops proved to be very effective. Almost all companies experienced an increase in their customer

understanding. They felt they were able to build some trust with the consumers in the workshops and that it enabled them to extrapolate this to a broader audience. Consumers felt they understood the companies' processes better during the workshop; this made them trust the sustainability of the company more. The topic of sustainability also resonated well with the transparency of the method.

Sustainability was built into the workshops in two ways: through a focus on specific sustainable food behaviours and through the selection of companies and consumers. The companies selected a specific sustainable food action as part of the problem definition for the workshop. The companies were selected for either being sustainability centred or aspiring sustainability. For the consumer groups, about half of the groups were trained by the GGVN project on sustainable consumption, the other half were selected from the companies' customer base.

The first part of the sustainability focus, incorporating a specific behaviour as part for the problem definition, proved to be difficult for many of the consumers and companies. The unfamiliarity of the customers that were not trained by GGVN made them afraid to say something wrong. The topic was too unfamiliar and too abstract. Therefore actual product or service ideas for more sustainable food behaviour were rather low. The consumers that were trained by GGVN did feel confident enough in coming up with ideas and mostly incorporated sustainability in their final concepts of the workshop. Despite this effort, the companies often

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saw too little direct value in these ideas for their company or too little possible influence on the behaviours with these ideas.

The second part however, the selection of specific consumers in combination with specific companies did work well. It created a sense of community, an urgency of the topic and education of consumers (Fig. 67). GGVN trained consumers in co-design workshops with sustainability centred companies made that a sense of community was experienced which strengthened the believe of both parties that they were heading in the right direction. GGVN trained consumers in combination with sustainability aspiring companies created a feeling of urgency of the topic with the companies as well as better understanding of the growing sustainable consumer group. Customer groups that were not trained by GGVN in combination with the sustainability centred companies all felt very grateful to be part of the workshops because they had learned about sustainability. The fact that the companies could show their production techniques and process made sustainable food consumption a lot more tangible for the consumers that were not familiar with the topic. This shows great value for an educational role of companies in the future. However, for the first goal of the co-design workshops this was not always beneficial. The untrained consumers placed themselves more into the role of learning and lower hierarchy, while equal hierarchy or even superior hierarchy from the consumer as an expert of her/his own experiences is desired in co-design to achieve a participatory deign process.

Therefore, the conclusion is that the front-runner sustainable consumers in Vietnam are crucial in motivating companies to continue or start paying attention to sustainable production. Also, sustainable companies can play a large role in spreading sustainable consumption through practical education and showing by example as well as building a sense of community.

5.6.3   REPLICATION AND THE FUTURE OF CO-DESIGN IN THE VIETNAMESE AGRO-FOOD SECTOR

Co-design in the agro-food sector has a great value but a different emphasis of the value than expected. Because it is valuable, replication of the method is desirable. However, some barriers remain. Previously the found barriers for co-design from literature were: a lack of co-design

skills, co-design knowledge and a lack of time; not being able to find and motivate the right people; not being able to change the current organizational system and opposition of a change in roles of people within organizations.

The barriers for the companies in this study to replicate co-design workshops resemble the ones found in literature: lack of time and budget, lack of skills and lack of knowledge and motivating consumers to join; as well as the change in organizational systems and change of roles of the designer, although these changes are of a different nature than for most companies in the West. In Vietnam the organizational systems of the companies are not fixed and built on long-term structures of divisions of roles. In general designers do not play an important role in the product development of agro-food companies. In Vietnam the role of design, beyond aesthetics, is starting to be acknowledged and companies are becoming larger and more structured and organized. The results also showed that the companies did not plan far into the future. Many of the companies, especially for the sustainable food products, are small scale with flexible structures that are still defining or fixing their processes. This makes it quite attractive to introduce co-design now, while companies are maturing and defining the structures of their processes.

5.6.4   THE VALUE OF CO-DESIGN, BEYOND INNOVATION AND NEW PRODUCT AND SERVICE IDEAS

To conclude, the results showed that the effect of the co-design workshops for ideas on product and service innovation was present but that rather the direct effect of customer understanding, customer education and creating a sense of community was much appreciated (Fig. 68). For some companies, the workshops inspired new product development in the form of concrete ideas. For almost all companies, the workshops increased customer understanding, building of trust and participatory design skills. The companies also perceived the latter as the highest values

The workshops were structured around sustainability and food, because this was previously identified as increasing concern among the Vietnamese middle class. The topic showed to be effective in attracting consumers, motivating them to join as well as facilitating consumer

education on sustainable food and building trust in the local food industry.

So, if barriers are overcome, it is possible that co-design with the front-runner customers in sustainability could help the sustainable centred companies and the sustainability aspiring companies to grab their competitive advantage by offering better adapted products through a better understanding of the sustainable desires of the urban middle class.
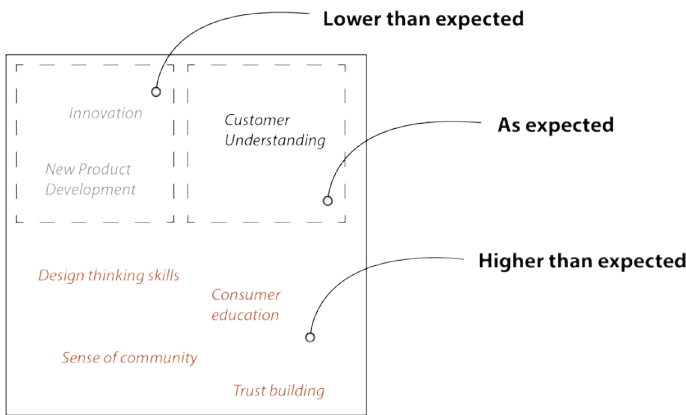

Figure 68. The degree of results achieved, expected and achieved.

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Curriculum vitae

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	Service design and innovation, a project on car sharing
Share Square	Creative business developer (Delft, 2011)
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B&W	Consulting & Venturing (Barcelona, 2010-2011)
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COLLABORATIVE PROJECTS

MECATE	Project on public transformation & social change (Mexico City, 2015)
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Future Faculty	Urban interventions in the post-socialist city (Moscow, 2009)
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Turn The Page	Chief editor & author of the IDE faculty magazine (Delft, 2007-2008)

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MSc TU Delft	Strategic Product Design (Delft, 2009-2012)
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OTHER ACTIVITIES

Facilitator	Workshop on co-creation for the Triennale (Milan, 2016)
Science Battle	Performer in PhD science theatre shows (Netherlands, 2016)
Education	Workshops for the Bachelor final thesis (Delft, 2015-2016)
Supervision	7 Master theses, 1 Joint Master Project (Delft, 2013-2016)
Lectures	Design Theory ands Methodology guest lecture (Delft, 2013)
Cycling	From Barcelona to R'dam (2011) and other places
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OTHER SCIENTIFIC ACTIVITIES

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Growing unsustainable consumption in Vietnam is a pressing issue, especially in urban areas. The effects of rapid economic growth, industrialization and increasing wealth in combination with a young, growing population makes that the middle class of Vietnam is on the rise. This movement within the population is making room to form and introduce new consumption patterns; patterns that are both sustainable as well as adapted to the improving living standards.

This thesis points out that food is the most promising category to start building these new consumption patterns from. In Vietnam both consumers and producers are looking for ways to make their practices sustainable. Design can help building and giving form to new behaviour patterns, products and services. However, creating more trust and understanding between the Vietnamese food consumers and producers is essential. Co-design specifically could enable the creation of trust and understanding as well as create a learning environment; ultimately leading to a better adapted, more attractive and sustainable food system in Vietnam.

TUDelft