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DESIGN RESEARCH ACROSS CULTURES: LESSONS LEARNED FROM FIELD EXPERIENCES

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ABSTRACT

This research employed a grounded theory methodology to understand the challenges and methods of conducting design research in other cultural contexts. Data were collected through in-depth interviews of twenty geographically dispersed designers who have field experience in conducting design ethnography in cultures significantly different than their own.

Keywords: Cross-cultural, design research, grounded theory

1 INTRODUCTION

The dynamics of globalization in social and economic systems has resulted in rapid growth and industrialization of nations with diverse cultural backgrounds such as China, India and many others coined as emerging markets. Emerging markets are in a transitional phase moving from developing to developed economic status, and participating in the global economy. The common process an emerging market experiences is attracting Western companies by the low cost of manufacturing and then enriching its own markets by these investments, and thus becoming a new market opportunity itself (Greving, 2010). The large population, growing middle class and booming consumption makes these markets attractive for many companies (Chavan & Prabhu, 2010). Although emerging markets are very attractive niches, it is also very challenging to fully understand needs, aspirations and limitations of people in these cultures. According to Chavan, Gorney, Prabhu and Arora (2009), socio economic gaps are very wide and "for everything you say the opposite is also true" (p. 28), luxurious consumption patterns reside with poverty.

It is less time intensive, costly and risky for profit-driven Western companies to manufacture a "global" product and market it across cultures with only superficial adjustments in language, color or packaging. However, this does not mean that global products can recognize cultural differences and can meet needs of individuals across cultures. For many Western companies the common practice of localizing products has been funneling marketing and advertisement efforts to relate the products to the local context, and thus finding viable foreign markets for existing products. Often times these products are adopted because of their association with modernity and Western lifestyles. However as more Western companies invest in these markets and new local companies emerge, the role of design has become more critical and important. Also, it is not the best practice in design to slightly modify products and benefit from reputation that comes from the foreignness of the brand or the company.

Thus, the best practices in design for another culture require developing and distributing culturally sensitive, environmentally sustainable and economically

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profitable products that can improve people's lives, rather than marketing global products which are actually designed for individuals from Western cultures. But how can designers actually understand what people need and want when there is significant cultural difference between them? The objective of this research is to understand the effect of cultural difference between designer and user on the design research process. The study especially focuses on the challenges of conducting ethnographic design research in other cultures and strategies used to overcome them.

2 LITERATURE REVIEW

Design research methods have been analyzed for their cultural sensitivity or new methods targeting specific characteristics of cultures have been developed. Hanington (2003) categorized human-centered design methods as traditional, adapted, and innovative. Traditional methods refer to surveys, interviews and focus groups, which can provide information about large number of individuals. Adapted methods refer to ethnographic techniques including observations and visual ethnography. Innovative methods are the participatory techniques where users are regarded as the participants of the process rather than informants. According to Lee and Sayed (2008) the cultural locale should be understood in the context of past history and future aspirations rather than current "exotic snapshots". Traditional and adapted design methods can only provide snapshots of the current situations. Innovative methods enable more culturally sensitive designs by addressing the flux from memories and dreams. The innovative methods empower individuals by integrating them with the design process. Designing in cross-cultural contexts require intense involvement and empathy of the designer during the design research. By employing innovative design methods designers have a higher possibility of seeing things from users' perspectives.

According to Lee and Lee (2009) many popular design research methods have been developed in the West and may not work properly in completely different cultures. Authors conducted experiments on how focus group interviews work in East Asia where people have different communication styles and weaker participatory discussion than in Western culture. The results of comparative experiments in the Netherlands and South Korea showed passive participation and poor member-to-member interactions from Korean participants. When a topic was provided, Dutch participants told "narratives", while Koreans gave "short answers." The Korean participants heavily relied on the facilitator, while Dutch participants proceeded with active discussion among themselves. This study proves that it is hard to understand users with different cultural backgrounds by application of Western-origin research methods such as focus groups.

Similarly, Chavan (2005) argues that design research methods originated from West are developed for Western cultures to articulate their thoughts. Designing for another culture, especially for emerging markets where collective expression is favored require specialized research techniques or tweaking established methods to fit the cultural context (Chavan & Prabhu, 2010; Medhi, 2007). For example, Asian users are hesitant to make negative comments, need more context for communication and are sensitive to higher hierarchy of the designer in the communication process (Chavan & Prabhu, 2010). The author developed series of research methods targeting participation of Indian and Chinese users using symbolic meaning association.

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These studies offer culture-specific alternatives to traditional Western-origin design research methods. However they don't necessarily answer whether these new methods will succeed when used by Western designers in another cultural context. Challenges of cross-cultural communication in applicability of these alternative methods by a Western designer still need to be investigated. There exists a gap in literature about understanding design research process and methods in cross-cultural contexts. This research uses a grounded theory approach to investigate challenges of design research in other cultures and strategies developed by designers.

3 METHODOLOGY: GROUNDED THEORY

Grounded theory (Glaser & Strauss, 1967) was adopted as the methodological framework for this qualitative study. In grounded theory the researcher does not start with a theory and test it; instead starts with a research question in mind, collects data through interviews and analyzes them simultaneously (Figure 1). The process is complex and iterative where results are grounded in the data from interview of participants who have experienced a particular process. (Strauss & Corbin, 1990).

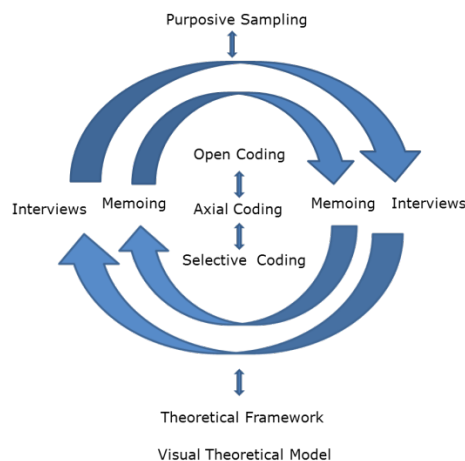


Figure 1: Grounded Theory Process

In this study, the data were collected through in-depth interviews of Western designers who have field experience in conducting design research in cultures significantly different than their own (i.e. British designer, Taiwanese user). Grounded theory requires purposefully selecting interviewees who can provide in-depth information about the process under investigation. Based on a pilot study three purposive sampling criteria are developed: 1) experience level of the designer, 2) company of employment and 3) the distinction between designers' and users' cultural backgrounds

1) Experience Level of the Designer: Designers who are expert and novice in conducting design research in other cultures were purposively selected. Expert designers provided more information about the methods and strategies while novice designers provided more information about the challenges of design research.

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2) Company of Employment: Company size and its mission create different challenges in conducting design research in other cultures. Smaller companies are less constrained with time while large companies are less constrained with cost. Also, profit-oriented companies are more vulnerable to local competition while non-profit companies are likely to take risks and try different approaches. As a result, including designers who are employed in diverse range of companies was determined as the second purposive sampling criterion.

3) The distinction between designers' and users' cultural backgrounds: The literature review supported that the more distinct the difference between designer's and user's cultural backgrounds, the more challenging the design research process is. Hofstede's (1991) cultural dimension scores, which is a quantifiable measure of cultural difference, were employed to determine the significance of cultural difference between designers and users.

Twenty Western designers from different geographical locations in the world, that meet purposive sampling criteria were interviewed either face-to-face in Washington D.C. and Hong Kong or by using online communication technologies (Table 1).

NAME	DESIGN FIELD	PRODUCT RANGE	DESIGNER'S NATIONAL CULTURE	USER'S NATIONAL CULTURE
A.M.C.	Industrial Design	Consumer Goods, Packaging	French	Chinese
A.L.	Industrial Design	Consumer Electronics	British	Chinese Japanese
A.A.	Industrial Design	Consumer Goods	American	Chinese
K.S.	Clothing Design	Clothing	American	Korean Chinese
A.K.	Industrial Design	Consumer Goods	Indian	Chinese South African American
K. L.	Industrial Design	Consumer Goods	Norwegian	Guatemalan Ugandan
C.K.	Industrial Design	Consumer Goods and Electronics	Norwegian	Chinese Japanese
F.B.	Industrial Design	Consumer Electronics	French	Taiwanese
J.B.	Industrial Design	Consumer Electronics	British	Taiwanese Chinese
J.G.	Industrial Design	Consumer Electronics and Service Design	Scottish/Italian	Indian Chinese Finnish
R.D.	Industrial Design	Consumer Goods	American	African
L.S.	Industrial Design	Consumer Goods	American	Tanzanian Indian
C.A.	Industrial Design	Consumer Goods	American	Tanzanian Indian
O.B	Industrial Design	Consumer Goods and Electronics	Turkish	American Dutch Swedish
K.P.	Communication Design	Website, logo, corporate identity	Canadian	Rwandan

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K.P.	Communication Design	Website, logo, corporate identity	Canadian	Rwandan
C.V.B.	Industrial & Clothing Design	Clothing Accessories	Dutch	Turkish
L. W.	Industrial Design	Consumer Goods	Australian	Batswana
N.H.	Industrial Design	Consumer Goods and Electronics	French	Chinese
H.F.	Industrial Design	Consumer Goods, Services	American	Indian Tanzanian Rwandan Guatemalan
N.W.	Industrial Design	Consumer Goods, Services	Australian	Tanzanian Indian

Table 1: Interviewees

Open-ended interview questions and probes that encouraged story telling about specific examples of cross-cultural design research experience were generated.

The results emerged from three levels of open, axial, and selective coding process using Qualitative Data Analysis Software "NVivo". In open coding main concepts were abstracted from interview transcriptions. At this stage memoing was used to capture interpretations of each concept, which helped to recognize implicit meanings and connections. In the axial coding stage the concepts were transformed into larger categories called core phenomena, conditions, strategies and consequences (Figure 2). In selective coding, propositions between categories were built as well as the propositions between a category and its concepts.

CORE PHENOMENON: CULTURAL IMMERSION	CAUSAL CONDITIONS	Physical or remote exposure of designer in users environment
	CONTEXTUAL CONDITIONS	In-person user research Immersive Observation Engaging Interviews Participatory Research Culture Specific Research
		Remote User Research Cultural Probes
	INTERVENING CONDITIONS	Building Relationship Role Negotiation Otherness Factor Communication and Language Need for more time Cost Health and Safety
Bureaucratic Procedure Safety of Data Communication Limited ability or understanding of users		

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CORE PHENOMENON: CULTURAL IMMERSION	STRATEGIES	Personal Demeanor Learning Basic Language & Gestures Selection of research methods Communicating the role of designer and design Educating Interpreter Emphasis on Observation Changing mode of communication from verbal to visual Culturally appropriate gestures Involving users in the research Constant Debriefing Multiple researcher in the field
	CONSEQUENCES	Flexibility Consideration of Context Pilot testing In-depth understating of users and cultural context

Table 2: Axial Coding Process

4 RESULTS AND DISCUSSION

The in-depth interviews with designers showed that designing for another culture is difficult because it is unfamiliar territory from the perspective of cultural, linguistic, environmental, technological and economic contexts. The highest numbers of codes in data analysis were clustered under the cultural immersion category, which discussed issues of conducting design research. Cultural immersion aims at contextual information about people based upon interpretation of the data gathered from the field. Interviewees widely discussed in-person or remote exposure in the user's environment and experiential context under cultural immersion category.

4.1 IN-PERSON CULTURAL IMMERSION

In-person design research provides designers first hand interaction with the user and experience of the other cultural context. Although literature review suggested that traditional research methods developed in the West are limited in other cultures, all interviewees described observation and interviews as their main methods. Observation where the designer is quiet, watching users and trying to experience their way of life, behaviors and environment is the main method used for cultural immersion. An Italian designer in India for a global mobile phone company describes how they employed this method:

"One thing we did in India which might sound strange, got up at 5 am in the morning to see the city wake up. This sounds strange but you learn so much, we saw people who live outside and they had cricket bags in their beds, like outdoor beds, you see the love for cricket in India, or dogs roaming the streets, people walking around, even though they might not have much money, they really care about their health, because they have these plants they use as a tooth brush, people handing those out in the morning at 6 am, really just watching." (J.G.)

Interviews as a cultural immersion method were described as informal and friendly talks. According to the interviewees, the interviews should be conducted

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under the conditions or in local environments related to the design problem. In this way, designers can observe the context, point out things to probe deeper. The following quote describes the importance of field interviews for designers:

"...especially if you're in their house, where you're in context, they're much more comfortable to talk. It sounds like a small thing, but even seeing their house and how they live and where their things are and just documenting how things are organized in spaces can tell you a lot about the person and their habits." (J. G.)

Backing up observations and interviews by visual data through photographs and videos was the common practice among all twenty interviewees. The visual data is also described as the best way to communicate design research results to other parties who may not be present in the field. Videos of observations or interviews offer advantages over field notes. Body expressions, what people do in addition to what they say can be captured and coded (Belk and Kozinets, 2005). However, they can be disturbing and hinder formation of rapport between designers and users. A Norwegian designer shared his experience in Uganda where taking a photo of a person meant stealing one's soul.

Although in-person design research offers rich contextual information in cross-cultural contexts, it also creates many challenges and requires prior-preparation and adaptation of traditional research methods. The sections below explore the challenges interviewees face while using traditional design research methods in cross-cultural contexts and the strategies they use to overcome these challenges.

4.1.1 Challenge: Building Relationship, Otherness Factor

Strategies: Personal Demeanor, Learning the Basic Language

The interviews showed that building relationship with another culture is the most important and challenging process in any in-person research. Users become more open and cooperative when designers show interest in them regardless of their design goals. Literature also supports this finding; according to Chambers (1992) "relaxed rapport" between an outsider and a local is the key to facilitate participation. Below is an exemplary quote from a Dutch designer who designs veils specialized for sports activities for Muslim immigrants:

"...you engage yourself in society, and you work co-work with women, any user group. You can't go in there as a business meeting saying this is what I need and then leave. You start relationships. You need to go in there and show interest regardless of your design goals. So, the first meeting would always be talk and coffee or tea and relaxed..." (C. V.B.)

The otherness factor was defined as another challenge, especially when designers and users come from diverse ethnical backgrounds and stand out as "the other" based on their physical appearances (i.e. Caucasian designer in Asia or Africa) building relationship becomes harder. According to Medhi (2007) in emerging markets like India, Western designers are perceived as wealthier outsiders and approached with undue respect. The interviewees often used phrases like "as a white man/woman" to define how they were perceived as "the other" by users in Asia and Africa. Interviewees described the otherness factor as a barrier to invisible cultural immersion and a disruptive factor in local contexts:

"...just by your own presence you're changing the context so you're not really observing it as it really is. We went to a slum in India and they had never seen a

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white female before so I had the whole village trying to touch me. The interviews were not going to happen. I just had to get out of there and leave the guys to it because they weren't as bothered about the men as they were about seeing a female, but I don't think they'd seen Westerners anyway, ever. As much as it was a great experience we weren't able to get around improving distraction... " (J.G.)

Building multi-cultural design teams, employing local designers in the team and working with a capable cultural broker who bridges between two cultures can help to overcome the perception of otherness factor. Personal demeanor of showing humility, respect, patience and interest is an important element in building relationship (Chambers, 1992) and overcoming otherness factor. Interviewees used the terms "people's person", "approachable", "friendly", "respectful" to describe how they should be reaching out to individuals. In this way, there can be greater freedom and equality in the process and it moves from being closed and formal to open and informal. Learning the basic words and gestures of the host culture's language is defined as a positive factor in starting communication with the users and therefore building the initial relationship. Especially, greeting and thanking terms can help to build relationships:

"...so learning the local language was a way, people are always impressed with you, not just as a traveler, but as a designer, it helps bridge barriers of understanding if you attempt to learn the language. I'd say that's another skill set or tool that I worked to access..." (K.P.)

4.1.2 Challenge: Role Negotiation

Strategies: Communicating the Role of Designer and Design

In building relationship with users, designers should also focus on role negotiation, which refers to redefining the perception of the designer as the expert and the user as the research subject. Interviewees often described how they were perceived as the expert or the power figure that can provide physical or financial solutions for problems immediately. Especially in designing for emerging markets where educational levels are not very high, designers should be able to communicate their role as a designer as well as what a design process is. Interviewees emphasized the difficulty of communicating their objectives as a designer:

"Company N for example in India, it's a big brand. So, us going to their house for many mothers were almost like a job opportunity for their children, which hindered us because we were not there to interview the children obviously. They would treat us as though, they had to impress us. So we were not really getting to the real them. So, we'd have to spend a really long time, sort of getting used to one another and getting them comfortable with us and also having them understand why we're really there." (J.G.)

4.1.3 Challenge: Communication

Strategies: Changing the Mode of Interaction from Verbal to Visual, Involving Users in the Research

Communication, verbal and non-verbal language are defined as other major barriers in conducting cross-cultural design research. Designers hire interpreters when they reach out to users for interview or observation sessions. However, interviewees all agreed that they miss a lot of contextual information as well as a connection with the other culture when they have to use interpreters. A designer in China explained her struggle with language as follows:

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"when we were doing research in China, one of the big issue that kept coming up was language. We hired simultaneous moderators from the agency that we work with. But if that simultaneous moderator's vocabulary isn't extensive enough, they tend to keep repeating words and this becomes a big problem, because I don't think the Chinese language is simple by any means. But when it's translated, it sounds simple. Everything is just a repetition of what they said five minutes ago, which I don't believe. So we miss out a lot of information. So it's a little more time-consuming because we do also ask the agency to transcribe and the transcriptions are good. But then you have to read through all the transcriptions and think. And then you don't have the time to ask some of the questions that you would have asked if you had understood during the time of interview. So language is certainly a barrier." (A.K.)

Changing the mode of interaction from verbal to visual by developing probes such as visual dictionaries, cards, graphs and smileys, prototypes and photos taken by users is the strategy defined by interviewees to back up verbal communication. Involving users in the research with more active roles is another helpful tool in cross-cultural settings where communication in common language is not possible. In classical design research methods, users have passive roles and the information is appropriated by the designers and thus it becomes "owned" by the designer (Chambers, 1992). Visual probes are also often used to engage users in the process. Changing the mode of interaction from verbal to visual not only helps to overcome the language challenge but also improves the relationships between users and designers. Visual literacy as compared to verbal literacy is almost universal and thus is accessible when language is not shared. The process of asking questions and extracting answers changes to a process of presentation and discussion by using visuals. Information is built collectively and the roles of designer and user are negotiated. The designer becomes the facilitator instead of the prober, and the user becomes the presenter instead of the respondent (Chambers, 1992). By visual data sharing the information becomes visible and public. Both researcher and user can point out, manipulate and discuss the information.

Common probes described by interviewees were photo diaries, time chart diaries, and visual communication cards, sketching or building something. A designer shares the advantages of using photo diaries to open up conversation during user interviews:

"When these pictures come back it is really great fun because you really get a good sense of who it is that you are going to go to spend time with. If you are not familiar with the environment it helps to break a lot of assumptions which is very important before you go out to do research because it is human nature to make assumptions and be subjective. It also helps to validate the fact, I thought the streets would be dirty and yes they are. So, it is a very good way to balance yourself. Participants by taking these pictures of their daily lives and sending them to you, almost say you are welcome to my home. You break the first barrier as a stranger walking into somebody's home. Then I use those pictures and ask them to talk about these pictures. That works like magic, these people haven't seen the pictures they took, and everyone wants to see the pictures they took. This is so and so, they just get involved and these pictures trigger stories that they wouldn't have told me otherwise."(A.K.)

4.1.4 **Challenge: Time**

Strategies: Constant Debrief, Multiple Researchers in the Field

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Time is another major barrier in cross-cultural design research. Designers explained that they miss a lot of information by “fast fashion style” quick design projects. Understanding a design problem in the context of another culture not only requires understanding the problem itself but also the people and their way of life. Another specific reason for longer time allocation for cultural immersion is that the biases and assumptions designers may hold towards the other culture can be recognized over time.

Chambers (1992) defines two extreme types of time allocation in cross-cultural research; “the rushed tourist” and “the resident expert”. The rushed tourist does not have the time and the sensitivity to build a relationship with the user and only grasps the surface level data that seems exotic about the other culture. On the other hand, the resident expert would spend years and show such sensitivity that he believes you can’t understand a culture unless you become part of it. Designers need to balance between prolonged cultural immersion, which opposes the dynamics of product development today and rushed cultural immersion processes. Rapid rural appraisal methods can be borrowed by designers to address time challenge. Systems perspective, triangulation of data collection, and iterative data collection and analysis are the main concepts in rapid appraisal (Beebe, 1995). Systems perspective suggests initial consideration of the other culture with all the contextual aspects and then quick identification of key contexts and optimal ignorance of the rest. Triangulation refers to combining consciously different research methods and different team members with diverse expertise based on cultural context under investigation. Iterative data collection and analysis require blocks of time dedicated to collecting data and reflecting on the data in parallel. This allows designers to make decisions about what other data to collect, what methods to use next. Thus, constant communication and debriefing among team members, scheduling time for team gathering after field work are very important before returning to data collection again:

“Every night it was kind of information overflow. Every night we would go back and download everything we heard. We would write down quotes, pick out the best pictures that we took during that day, and post everything on a wall. We had a war room, which we called it, where we put faces on the wall; we put observations – we just wanted to get things down before we forgot them. So every day we would do that. Every day we would tweak the questions that we wanted to ask. And if we still had some overarching question, made sure we answered that somehow the next day.” (L.S.)

4.2 REMOTE CULTURAL IMMERSION

Remote research in cultural immersion is employed when designers do not have the financial resources, time and infrastructure to relocate. The main method employed by interviewees in remote research is cultural probes which provide a way of gathering information by asking users to self-report through diaries (Gaver, Dunne & Pacenti, 1999). Users are given a set of materials such as diary, pens, recording devices and cameras and guidelines about what and how to record through a specific period of time.

When conducting remote research in another culture there are several challenges that need to be considered in developing the toolkit as well as in data processing, such as data safety, flexibility, bureaucracy, and communication.

4.2.1 Challenges: Bureaucracy, Data Safety

Strategy: Consideration of Context

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Designers need to consider the bureaucratic procedures of sending the cultural probe materials. Especially in Asian countries sending toolkits, which include high number of digital recording, devices are likely to get stuck in customs. An interviewee explained how the design project was affected due to the bureaucracy in Indian customs.

"If you want to do a big ethnography project in a place like India and you send 24 cameras through DHL, like a client did. Don't expect those cameras to come out of customs before two weeks. Same in China. And suddenly your project is delayed; everything is messed up. And as much as I told the client, "Don't do this. Do them in small batches. They were like, 'no, but we've done this in other places, so this should work'. You don't know the Indian bureaucracy, if anything can go wrong in India, it will. Therefore, if I need four weeks for a project then I need to plan eight weeks in advance." (A.K.)

Safety precautions are needed to make sure the data collection tools will be returned and the data recorded by the users will not be spoiled. This requires consideration of the context and where the cultural probe kits will be used. For example, a designer developed probe kit to ensure security of the data and kit components for a design project in South African low-income communities where crime rates are high. Instead of using the standard disposable cameras, which might be stolen, the designer included Polaroid cameras, which would not be worthy of stealing since its films are expensive and its resale is not common. By using Polaroid cameras the designer also planned to engage participants in the research. Polaroid cameras allowed users to see the photos they took and share them with their community. The designer also took precautions to secure the safety of the data so included a metal box of biscuits as an incentive and then used those metal boxes as a container to store photos taken by the users.

4.2.2 Challenge: Limited Ability/Understanding of Users, Communication Strategy: Pilot Testing

A commonly described obstacle in using cultural probes was limited ability and/or understanding. Using active probes would not work in the situations where users are not familiar with camera technology or creating ideas. Thus, probing to engage users in research was commonly defined as hit/miss situations:

"..The challenge with technology is that people may not know how to use it and I learned yesterday that after two days the camera was broken....we always sort of aim for the lowest tech so that it does not matter if the electricity is off or the camera is broken or everything is stolen from you. So, everything that can be done on a sketch pad or with a pen is good... if you want people to keep a diary then you need to be extremely specific about what you want it for, they might end up writing everything...you cannot expect anything, so prepare for everything" (K.L.)

Communication is a challenge in remote research. Designers need a cultural broker who will communicate between the two cultures and conduct the exercises and send the results back. Designers' way of communicating with the participant users will be the guidelines provided in the toolkit. Therefore, instructions should be very clear and easy to understand. The guidelines may also require translation into the users' language. Pilot testing the toolkit before sending it out helps to overcome any communication problems resulting from not very clearly-written instructions.

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"...maybe 40% of the photos were not useful they were either too dark or not relevant. But I think that's all right. You just had to make sure or be aware that you cannot use 100% of the photos and still get a lot of insights. From the experience of this, it is very important to have very tidy instructions because some groups got photos from outdoors that were not part of the research at all. That was because of the lack of information in the instructions." (C.K)

5 CONCLUSION

Design research is highly affected by the diversity of social, environmental, and economic contexts during a cross-cultural design process. Although literature suggests traditional methods of observations and interviews may not work outside Western cultures, the results of this study shows that they are still widely used with adjustments that respond to challenges such as building relationship with users, otherness factor, role negotiation, communication and time. Designers and users often times cannot communicate in a common language. The differences in cultural ethnicity add a second layer of otherness. Negotiating the role of the designer and user in the process and overcoming the expert-subject relationship is another additional challenge. These challenges residing from the cultural difference between designers and users result in increased time allocation for cultural immersion.

As an alternative to traditional research methods, designers employ remote research to avoid challenges that arise from in-person cross-cultural communication. During remote research, designers struggle with managing the communication remotely and ensuring that data collected by users will be returned safely. Using electronic devices as remote data collection tools is not only challenged by limited ability of users but also the by the bureaucratic procedures of sending them overseas.

Thus, bottlenecks in research are likely to occur. Companies should consider employing professionals trained in design research, local designers or researchers and social scientists in their design teams to minimize the challenges. For companies not large enough to have multi-disciplinary and multi-national design teams it is important to have local partners and find the best possible cultural broker.

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