Design for development

An analysis of western innovation and design in developing countries

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ABSTRACT

This paper presents the complex dynamics between western development projects in emerging markets and the people these ventures aim to help. Examples and methodologies related to existing projects are used to illustrate challenges and how the user-centered approach of design thinking could make the processes more efficient and inclusive.

KEYWORDS: Design thinking, Emerging markets, Innovation

1. INTRODUCTION

Form, function, beauty and ergonomics have always been the measure of good design, even the word design is an expression associated with quality and luxury products. The writer of "Design revolution" Emily Pilloton argues that this conception is about to change [1]. As western enterprises and privately owned businesses are seeking opportunities in emerging markets [2], designers also embrace the possibility for making a social impact. Accessibility, affordability, sustainability and social worth are becoming the new norm for what good design stands for.

Improving the lives of people in developing countries has traditionally been a responsibility undertaken by official development aid and non-profit organizations. These organizations run on funds and donations given by individuals, companies and governments in developed countries. The surplus revenue is used with the intent of improving social issues related to health, education, food security and drinking water in developing countries [3]. However, in recent years a growing number of consuming households, urbanization and progress in local businesses has made Asia and Sub-Saharan Africa the fastest growing regions in the world [4]. Conventionally these regions have been associated with poverty, conflicts, diseases and emergency relief, but they are now emerging as markets with a potential for future profit.

In 2000, the United Nations called for a global collective call to action by establishing eight Millennium Development Goals. Each goal has specific targets, which are made quantifiable with dates for achieving them [5].

- To eradicate extreme poverty and hunger.
- To achieve universal primary education.
- To promote gender equality and empowerment of women.
- To reduce child mortality.
- To improve maternal health.
- To combat HIV/AIDS, malaria and other diseases.
- To ensure environmental sustainability.
- To develop a global partnership for development.

In the Human development Report of 2014 it is stated that overall human development levels continue to rise, but at a slower pace than before. It concludes that better collaboration and knowledge transfer between projects and countries are essential to ensure a sustainable development for both people and the environment [6].

Sarah A. Knutslien from Design without borders, suggest that the value of integrating designers in the development process lies in their training as specialists in creative problem solving. This can be a powerful asset in making the development process more effective and dedicated to the needs and desires of the end-user [7].

Designing products for distant markets is a difficult and complex task, which often ends up with decisions based on assumptions about the needs of the end-user, rather then facts and observation. It is important to consider that even though a product or service have a social mission with good intentions, it does not mean that the product itself is great.

A number of business and design strategies have been launched in order to develop successful products and services for local users in developing countries. Customer value chain analysis [8], design for the base of the pyramid [9], design for the micro-entrepreneur [10], design for the other 90% [11] and design for emerging markets [12] are examples. These methods are based on a user-centered approach, where the emphasis is on identifying the different stakeholders and mapping their needs through systematic research and observation.

Nevertheless, studies show that only about 13% of companies who invest in innovation for emerging markets are actually growing [13], and that less than half of the companies meet their own goals [12]. These figures indicates that products made for emerging markets that have been developed in Western countries may not have such a big impact.

1.1 The goal of this paper

Why do products and services created by western organizations and businesses for developing countries fail at such a high rate?

This paper aims to look at the gap between decision-making in the innovation process and market response to launched products in order to suggest a future position for designers to contribute in development issues.

1.2 The structure of this paper

The first part of this paper gives an introduction to how designers approach problem solving and how one branch of design thinking is aspiring towards social change. The following section emphasizes on common perceptions about stakeholders in developing countries, what their individual requirements are and how they are understood.

The paper goes on to examine different western enterprises and examples of their contributions to development regarding products and services. The examples provide some insight in how enriching lives of people in developing countries are aligned with the intentions of the companies and organizations. Finally, the findings are summarized and discussed.

1.3 Definitions

There is no universal, agreed-upon criterion for what makes a **developing country** versus developed country and which countries fit these two categories. In general the term is used to characterize countries with an underdeveloped industrial base and a low human development index (HDI) relative to other countries [5].

Innovation is an application of a new, better and more efficient solution that meets new requirements in the market. It may be an idea, method, device or process.

The term **emerging markets** dates back to the 80's and describes countries with an emerging economy [14]. The term itself is debated to be outdated and misleading. It comprises of countries that are experiencing high-economic growth, some examples are India, China and Brazil.

Sustainable development is growth that meets the needs of the present, but is conducted without depletion of natural resources in order to secure the possibilities for future generations to meet their own needs [15].

2. DESIGN THINKING

Design thinking is a formal process for innovation that evolved from traditional product design techniques. It was first introduced as a method for creative action in sciences at the end of the 1960's [16]. Today there are many different opinions about the exact definition of design thinking, or what it is going to be. Generally it is viewed as a comprehensive multi-discipline platform for user-centered innovation. Important features include discovering the needs of people, the possibilities of technology and requirements for business success. The purpose is to create a holistic solution with the future in mind [17].

2.1 Background

The beginning of industrial design dates back to the industrial revolution in the mid 18th century. The modern conception of industrial design, however, dates back to the 1930s, with the American streamlining and the contrasting European functionalism styles. These styles introduced the strong focus on design as a mean to increase sales of consumer products and to lower the production costs of the items [18]. In the 1970's Victor Papanek was one of the first advocates for responsible- or social design, claiming that designers are able to cause real change in the world by designing for people's needs rather than their wants [19]. The main functions of design firms today are still to cater

corporate clients and their consumer markets. The social entrepreneur Paul Polak claims that 95% of designers are solely devoted to products and services for the richest ten percent of the world's customers. As the man behind the term "design for the other 90%", he argues that designers have to meet poor people as customers, rather than recipients of charity. This will open the unexploited market opportunities that lie in developing countries [11].

One of the first to introduce design thinking as a business model was Tim Brown, CEO of IDEO. In his book Design for change, he presents the designer mindset as a framework for understanding and creating innovative business propositions. The objective is to apply a human-centered approach to problem solving by using various design tools and multidisciplinary collaboration. The process is solution-based and iterative, which means that it starts with the goal of a better future rather than a specific problem. The main stages of the process are inspiration, ideation and implementation. These steps may be overlapping, occur simultaneously and be repeated multiple times in order to discover hidden parameters and open alternative paths which may lead to the goal [20].
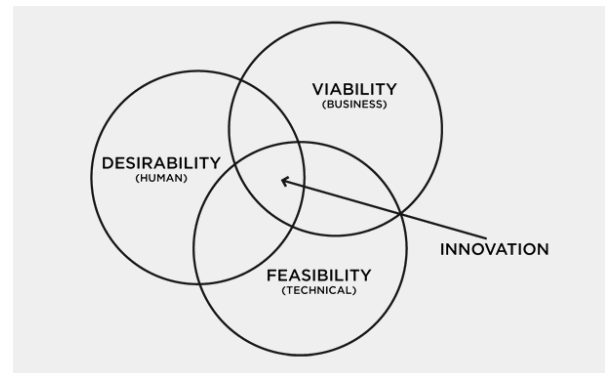

Figure 1: Innovation in design thinking

There are several ways of getting through these stages, but to understand how the users are included and approached in the process, it is essential to highlight the most common design tools and methods that are employed.

2.2 Inspiration

The inspiration phase is the identification of the opportunity that motivates the search for solutions. Through in-depth qualitative and quantitative research related to the issue, designers are able to identify the scope of the problem and establish a framework for the development of a solution. This should be defined in terms of; who the main user or user groups are, the context in which the final solution is going to be used and what the main success factors for the project are. Commonly used research techniques include, but are not limited to: Stakeholder mapping, Interviewing end-users, surveys, creating user personas, benchmarking - looking at existing solutions that are trying to solve the same problem, mind-mapping, situational and user journey analysis [17].

2.3 Ideation

The ideation phase consists of generating, developing, and testing ideas. In this phase the designer make use of divergent- and convergent thinking, where the aim is to diverge in order to explore as many solutions as possible, followed by a converging phase to focus on a specific resolution. To generate ideas, brainstorming is the most usual starting point, an unrestricted space where the intention is to come up with as many ideas as possible. At this stage, quantity is valued over quality and feasibility in order to spark more ideas. This is usually done with mind maps or sketching. Sketching and data visualization are some of the most important tools for communicating new ideas and translate abstract requirements to concrete objects.

In order to converge on the vast amount of ideas, the proposal can be weighted against each other according to important requirements as for example feasibility, intuitiveness, price and so forth. If there are uncertainties or assumptions being made about important features, proposed solutions are quickly tested with low-resolution prototypes in order to get direct feedback from the users. In this way, it is easy to assess and reassess the designs and optimize the solution.

2.4 Implementation

The concept becomes more defined after several iterations of the first two phases, and when the final solution is clear it ready for production. The implementation is the phase that transfers the idea from a concept to reality and leads the final solution into the market.

3. DESIGN THINKING FOR SOCIAL IMPACT

One of the most fundamental lessons we learn as designers is that understanding the user needs according to his or hers possibilities are the core of the solution. Prahalad, author of Fortune at the bottom of the pyramid, explains that the process of designing for developing countries starts when BOP consumers are respected as individuals. This mutual respect leads the process of co-creation and viewing consumers as equally important joint problem-solvers [21].

3.1 Understanding the users

The Customer value-chain analysis was published in Research for engineering in 2006. It is intended as a tool for deciding on moving forward or terminating a project in an early phase.

In the beginning of a process it is essential to understand who your users are. In complex systems the key is to identify all stakeholders, their relationships between each other and the product solution. The decision-making is based on comparing if the requirements of the most important users are possible to achieve, within the limitations of the design teams resources as proposed by the projects business model [8]. Many products designed for emerging markets fail because its content, function, or design runs into cultural norms that impede its adoption. A case of this is Kellogg Cornflakes entry into the Indian market. Unlike western countries, Indians

preferred a warm meal for breakfast, pouring hot, instead of cold milk on the cornflakes. This made the cornflakes immediately disintegrate into some porridge like consistency, which was not very appetizing. The company decided to reengineer the flakes to withstand hot milk [22].

In Design for the other 90%, Paul Polak argues that when designing for developing countries "affordability isn't everything… it's the only thing". Meaning that design starts by knowing what poor people as customers are willing to pay for something that meets their needs [11]. The CEO of FutureBrands Santosh Desai agrees that "Getting the right product at the right price is the biggest challenge," but if not designed with sensitivity to the market, low-cost products may strike target users as low quality compromises. With limited incomes, consumers in developing countries are cautious; they prefer to pay more for quality than risk product failure. The financial loss from an underperforming product will be far more serious [21].

The Design for micro-enterprise model emphasizes the end-user as a micro-entrepreneur and focus on creating products that foster micro-enterprises. Stating that the most sustainable and long term solution towards helping people getting a better life, is to empower them by using design as a tool for productivity and income generation. The main success factors of this method are related to the products ability to generate revenue and grow with the user as their business grows, reliability or that the product is easy to maintain and consideration of multi-functionality [10].

3.2 Understanding the context

Design for the base of the pyramid project was initiated by Sam Pitroda, a telecom entrepreneur and advisor to the government of India and published by Patrick Whitney and Anjali Kelkar in 2004. The focus is on how design can contribute to improved housing in the urban slums of India and create interconnected solutions that address many problems at once. Their starting point is to initiate both primary and secondary research, in order to get a broad framework for understanding the slums and overall scope of opportunity [9]. The secondary research focuses on existing worldwide initiatives sponsored by international organizations, corporate philanthropy and local NGOs. For designers it is essential to learn from mistakes others have made in creating products for emerging markets. It helps in getting a deeper awareness of the culture and context of the target market [23].

The primary ethnographic research in the slums was planned and managed from Chicago and conducted by local teams they hired in India. The research teams used both a user-experience framework to analyze physical, cognitive, social, and cultural aspects of daily life in these households. For documentation they made use of disposable cameras and notebooks to be used with the research structure POEMS - people, objects, environments, messages, and services [9].

In order to truly understand the context, design teams need to observe both distinct cultural practices and subtle nuances. This might include a country's history, religious beliefs, climate, geography, languages, aesthetics and its popular culture. The German designer Bonsiepe points to remote-design as a certain road to failure. Getting a thorough understanding of a complex foreign society and identifying opportunities for innovation are near to impossible without spending a generous amount of time in that environment [24]. Getting to know the available local resources, Infrastructure, education and economy may be lost when observing a market from a distance.

In a 2006 Deloitte study, 40 % of executives in companies competing in emerging markets said their products were designed locally [13]. Doing business in the world's emerging markets requires radical innovations in technology, business models, and design technologies.

3.3. Understanding the problem

More than 1 billion people are still living in extreme poverty [15] where political threats, community tensions, violent conflict, neglect of public health, environmental damages, crime and discrimination are part of a daily struggle. Unresponsive state institutions and corruption add to individual and community vulnerability. Economic growth alone is not enough to reduce exposure to conflict and personal insecurity for people in developing countries. Creating trust between society and institutions as well as creating opportunities for wage-paying employment are essential elements for a human welfare system to emerge [4].

The following section of this paper presents different types of western enterprises currently operating in emerging markets and development countries. The aim is to highlight some of the benefits and downsides related to the different approaches.

4. INNOVATION FOR POVERTY ERADICATION

Development assistance is aid targeted at helping countries to achieve long-term sustainable economic growth and achieving poverty reduction [25]. Traditionally this aid has been donations from governments in developed countries and non-government-organizations (NGOs).

4.1 Non-profit organizations

Official development assistance (ODA) from governments has been criticized for having no effect on the speed of which a country develops. Rather than facilitating poverty reduction, direct donation creates dependency and corruption in the recipient country [26]. Because of the intricate nature of the problems ODA programs try to solve, there are to this day no official numbers or conclusion whether ODA has been successful or not [27].

A non-governmental organization (NGO) is defined as a non-profit voluntary organization operating on a local, national or international level. NGOs are a diverse constellations of charities, foundations, service organizations and non-profit organizations working on addressing a big range of issues related to human rights, environmental - or development work. NGOs non-profit status means they are not subject to short-term financial objectives, but are able to devote themselves to issues that occur across longer time line [26].

Issa G. Shivji, a leading expert on African law and development issues argues that many NGOs are more self-interested than altruistic in their motives and critiques the "objective effects of actions, regardless of their intentions". Since non-profit organizations are dependent on donations, the development projects have to appeal to potential donors. Accordingly the donors interests steers the products in the direction they believe is suitable for people living in developing countries, and the designers often end up creating products which satisfy their donors and unknowingly ignore the actual needs of the end-user [3]. As a Kenyan NGO that was developing a micro-irrigation treadle pump for small-scale farmers experienced.

They were funded by a bilateral donor organization for research and design of the product. While defining the business model, the designers found that the NGO had two distinct customer groups that did not interact with each other except through the NGO: those related to the donor and those related to the end-user. The challenge was that the requirements of the customers did not align. For the farmer, a low pump cost was most important, whereas the donor organization was constrained by time and willing to accept a higher pump cost. The dilemma for the designers was that in order to meet the farmer's requirement, they would jeopardize future funding from the donor. But if the farmer's priorities were not addressed, the pumps would be unaffordable and the project would be a failure. In this case, the NGO gave

priority to the farmer. The product became extremely successful in East Africa, although they faced continuous funding problems [8].

The challenge of satisfying or attracting potential donors for funding rather than the actual end user is a drawback for many NGO projects, either if they are aware of it or not.

The one laptop per child (OLPC) is one of the most renowned nonprofit organizations. It was celebrated as a great advantage and empowerment of students in developing countries. Their goal was to provide a collaborative, joyful and self-empowered learning device for children in developing countries. In 2007 they launched a "buy one get one" campaign of the computers, which became an immediate success, and today more than 600 000 computers are currently in use worldwide [1].

The problems arose when the computer became twice as expensive as first estimated, and when it finally reached the intended market, the aesthetics and functionality was criticized for not meeting the more basic needs of students in the developing world. The software was simple and made for connectivity, but as 97% of the worlds population have a cellphone [28] the basic computer became redundant. As well as lacking Internet access and electricity, the children were not allowed to bring the computers home from school. With minimal training of teachers and the computer being near impossible to repair with local resources, the impact for the intended users are diminishing [29].

4.2 Development finance institutions

The goal of Development finance institutions (DFI) is to combat poverty through private sector development. They specialize in loans with longer maturities and provide risk mitigation for financing long-term infrastructure projects in developing countries. This enables investors to proceed with plans they might otherwise abandon, making them an important player for socio-economic innovation [30].

DFIs usually invest in sectors related to infrastructure, job-creation and local business environment. Examples are electricity, banks, agriculture and tourism. The main criteria are that it has to have a high potential for contributing to local development.

In a brief from the Overseas Development Institute about general use of subsidies by DFIs it is discussed whether or not DFIs take appropriate risks. It is difficult to determine whether or not they accept projects that have too small of a chance of succeeding, or if they are leveling the risks adequately with subsidiaries. There is very little data on the specific contributions of DFIs. It is argued that they would benefit from a higher level of transparency in regards to what each subsidiary is for, the eligibility criteria for access, whether they are 'tied' and what effects they have [30].

4.3 For-profit organizations

For-profit enterprises usually have a different approach when expanding their business to emerging markets than non-profit organizations. Where non-profits see a problem and attempt to solve it, for-profits already have an existing product or service that they try to adapt to these new markets. The risk is that the corporation will transpose a developed-market experience onto an emerging market, neglecting the different conditions in developing-markets and leading to a potentially expensive failure [23].

With the book Fortune at the bottom of the pyramid, Prahalad made a case for inclusive capitalism. He points at examples of companies like Unilever, Hewlett-Packard and DuPont who have been successful in making a profit while helping to contribute to the eradication of worldwide poverty in emerging markets [21]. For the last 20 years western firms has struggled to get a foothold in the developing world as a result of an idea that firms would rapidly expand in fast-growing emerging economies. [31] Yet a

study from 2007 showed that less than half of the companies competing in emerging markets were successful at meeting their goals. [12]

A lesson learned in the early days of the emerging-market trend was Whirlpools global venture with the "World Washer". Whirlpool designed a stripped-down automatic washing machine that would fit the needs of people in emerging markets and it was initially launched in Brazil, Mexico, China and India. Their goal was to get a position in these markets and become a world market leader in home appliances. Although the product sold quite well in most countries, the sales numbers in India was a complete disaster. Through investigation, they came to realize that the problem was a millimeter-wide gap between the machine's agitator and drum. Traditional Indian garments, like saris, are made of long thin sheets of cotton and silk. The delicate garments got easily caught in the small gap, and in turn got shredded to pieces. This resulted in a devastating financial loss and forced Whirlpool to entirely restructure its business model. [32]

5. DISCUSSION

The focus of the literature reviewed in this article are mainly concerned with long-term solutions and products as a gateway to progress. At the head of the debate is the demand for design to become a tool for social change rather than consumerism. The intention of this article is to uncover the place for design in the forefront of developing a better world, but there still rests uncertainty regarding the role and meaning of the designer.

The most successful projects are the ones where the end-user had a say in the final solution, co-creation leads to user engagement and ownership to the product. Necessity is the mother of ingenuity is a known cliché, for thousands of year's mankind has been crafting tools to make tasks easier. In developing countries people are making due with what they have to solve problems at hand, a rubber tier

become shoes and a roadway sign become a roof.

One may argue that designers have become too advanced. Like the one laptop per child, un-successful at the intended purpose of being a tool in academic environments in developing countries, but it became a hit in elementary schools in consumer markets. In our technology driven society, it is difficult to relate to the most basic need design can serve.

According to the world human development report, the general state of people in the world is improving. The next great challenge is to keep it that way. According to Maslow's Hierarchy of needs, the second most important necessity is safety. To ensure safety bigger measures have to be taken regarding local protracted institutions and infrastructure.

This means taking a step away from product design, solutions and systems might be better than a wrapped and ready device. These might be harder to get funded, and more difficult to evaluate in a business plan since it is less tangible than a physical object as a solution.

6. CONCLUSION

For development aid focused on long-term solutions, commitment from both local communities and international organizations are important. The locals can contribute with extensive knowledge and western enterprises with the resources and tools to develop projects. However, for a great impact, the solution has to be viable in terms of the potential for locals to follow up the changes by them selves. With a background in design thinking, the designer would play a key role in this process. As a communicator, facilitator and creative problem-solver the designer can contribute to create a stronger connection between the different stakeholders.

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