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Initial Resource Management at the Base of the Pyramid

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Abstract

The Base of the Pyramid (BoP) literature often take the perspective of large Multinational Enterprises (MNEs), and how they can leverage their existing resource portfolio by entering and tapping the market at the BoP. A recurring topic is how resources from a western context can be contextualized and applied to the BoP. In contrast, we focus on building a resource portfolio bottom up at the BoP. We investigate the resource development trajectory of strategic, ordinary and junk resources, and we ask: How can entrepreneurs manage strategic, ordinary and junk resources through acquiring, accumulating and divesting at the BoP? We apply a single-case study design of a decentralized renewable energy firm, operating in rural India. Contrary to extant literature, we argue for the importance of divesting resources early on in the resource management trajectory. Moreover, the BoP literature increasingly acknowledges that there is little market to tap at the BoP, it must be created. We contribute to this line of reasoning by describing how junk resources develop into ordinary, and how ordinary resources develop into strategic resources, while simultaneously creating a market. We also provide a conceptual framework that merges the management of resources with the characteristics of resources.

Introduction

The Base of the Pyramid (BoP) proposition's central claim is that it is possible to create wealth for firms, and at the same time alleviate poverty by including the world's poor – the Base of the Economic Pyramid – in a market economy (Prahalad and Hammond, 2002; Prahalad and Hart, 2002). Individual purchasing power may be low, however the accumulated purchasing power of the poor is enormous the BoP, and thus attractive for firms. However, due to the challenging infrastructure for market transactions at the BoP (Webb et al., 2010), Multi National Enterprises (MNEs) has been the pivoting point of the discussion (London and Hart, 2004; Schrader et al., 2012; Seelos and Mair, 2007; Webb et al., 2010). Due to the huge resource portfolio MNEs possess, they were expected to be capable of compensating for the lack of an efficient commercial infrastructure at the BoP, and even build a new one (Prahalad and Hart, 2002). Not only that, due to their global capabilities, they could replicate this strategy to other settings once they had succeeded in one BoP setting. In other words, existing resources and capabilities developed in the west, was expected to generate additional wealth for MNEs and at the same time drive poverty alleviation at the BoP.

It has turned out difficult for MNEs to leverage their existing resource portfolio, and extending it to the BoP contexts because the challenges at the BoP are different compared to the West (London and Hart, 2004). The BoP context represents high levels of uncertainty (Alvarez and Barney, 2006; Hoskisson et al., 2000) due to little supportive institutional- (Khanna et al., 2005) and business ecosystem (de Soto, 2000) for market transactions. Moreover, limited capital markets, uneducated workforce, poorly developed public infrastructure, informal governance mechanism, and little or no property rights protections are challenges that have to be overcome for successful business operations at the BoP (Webb et al., 2010). The specific institutional context at the BoP influences the opportunity perceived, and the subsequent resource management trajectory (Webb et al., 2010).

To compensate for the lack of deep knowledge about these factors and institutional voids at the BoP, numerous strategies have been suggested: Radical transactiveness is the capability to identify, explore and integrate the voices of people at the fringe in society, and use that as the basis for your business activities (Hart and Sharma, 2004). Instead of doing more of the same evolutionary routines, firms need to develop revolutionary routines in order to include the poor (Milstein et al., 2007). Social embeddedness refers to the capacity a firm has to create deep connections with the local social infrastructure and let that influence and shape a firm's activities (London and Hart, 2004). Similarly, native capabilities put focus on the need to build on existing conditions, despite their potential foreignness, instead of remain in the western market thinking (Hart and London, 2005).

Despite a more sensitive approach to local conditions, these strategies nevertheless put MNEs' *extant* resource- and capability portfolio at the center of attention. There is an increasing attention given to the local entrepreneur and

the producer at the BoP (London et al., 2010; Ramachandran et al., 2012), but in general, limited attention has been given to the local BoP entrepreneur. How to gain access to resources, and subsequently leverage those, are core activities for entrepreneurs (Ireland et al., 2001). According to Sirmon et al. (2007), there are three phases of resource management: Structuring, bundling and leveraging. While the two latter has indirectly been covered in the BoP literature by mainly focusing on MNEs, and their entrance into the BoP context, we put emphasis on the prior one, the structuring phase. We do so from the entrepreneur's perspective. Structuring resources consists of acquiring, accumulating and divesting resources (Sirmon et al., 2007).

In order to follow the resource trajectory, and the change of resources over time, we find the characteristic of resources in Resource Based Theory (RBT) to be lacking. Resources that are valuable, rare, inimitable and non-substitutable (VRIN) are believed to be strategic and thus contribute to a firm's competitive advantage. However, entrepreneurs are in most cases resource constrained from inception (Brush et al., 2001), and do not enjoy a resource portfolio that has the VRIN characteristics. In fact, most resources are junk or ordinary resources (Vanessa et al., 2013). At least at the BoP, where there are limited access to strategic factor markets (Milstein et al., 2007; Webb et al., 2010), junk and ordinary resources will most likely play an important role in the initial resource management. In general, little work has been done on resource management, and to our knowledge, no work exists on how different resources (junk, ordinary and strategic) are managed in a resource-constrained environment such as the BoP. Thus we put forward the following research question: How can entrepreneurs manage junk, ordinary and strategic resources through accumulation, acquiring and divesting at the BoP?

Husk Power Systems (HPS) is an Indian firm that specializes in distributed electricity based on renewable energy for the rural Indian market. We conduct a single case study of HPS and their initial resource development. As such, we contribute theoretically to the BoP literature, by looking more in detail how entrepreneurs can structure, a resource portfolio at the BoP. We also contribute to the RBT, which has taken optimal resource management for granted (Ireland et al., 2003) by exploring how resources are managed in the initial phase of a firm's existence, when this takes place in a resource constrained environment.

The article proceeds as follows: First, we introduce the RBT and the resource management framework developed by Sirmon et al. (2007). We continue by elaborating on the initial phase of resource management, the structuring phase, which consists of acquiring, accumulating and divesting resources (ibid), and how these activities relate to the BoP context. Subsequently, the research design is explained, before results and findings are presented. This is followed by a discussion, and conclusion before limitations and suggestions for future research is presented.

Initial Resource Management and the BoP Context

RBT originally explains how firms create competitive advantage based on the resources owned and controlled by the company (Barney, 1991; Rumelt, 1984; Wernerfelt, 1984). If the resources hold the attributes such as being valuable, rare, inimitable and non-substitutable (VRIN), chances increased that they would be the basis for competitive advantage (Barney, 1991). However, this only covers the characteristics of resources. How resources are managed is a different concept all together. The management of resources, in contrast to the characteristics of resources, has been taken for granted within RBT (Ireland et al., 2003). However, a growing body of literature emphasizes the management of resource rather than its characteristics (Hansen et al., 2004; Sirmon et al., 2007; Sirmon et al., 2011).

Sirmon et al. (2007) provide a conceptual framework of the entire resource management trajectory consisting of three stages of resource management. Not being strictly chronological, there is a sequence to the three phases consisting of structuring, bundling and leveraging. Structuring resources, which would be the initial entrepreneurial resource management activity, and our focus in this paper, refers to the initial set up of a resources base. Sub activities within this category are acquiring, accumulating and divesting resources. The latter is to let go of some resources, so that they no longer is part of an organization's resource pool, while the initial two are about obtaining resources. In the following we will discuss the three activities in light of the strategic, ordinary, and junk resources in relation to the BoP context.

Strategic resources are those resources that are valuable, rare, inimitable and non-substitutable, and they contribute to sustainable competitive advantage. Ordinary resources are perceived as neutral resources, while junk resources are believed to have negative impact on firm performance (Vanessa et al., 2013).

Acquiring

Acquiring refers to the purchase of strategic factors. Strategic factors are resources and services sold and exchanged between firms. They are resources more or less fully developed outside the organization, and when acquired, they contribute to the fulfillment of a firm's strategy. However, acquiring strategic resources depends on a strategic factor market in which resources are accessible (Barney, 1986).

Even in the case where there is a strategic market, the acquisition may not lead to rent generation. The complexity of resources heterogeneity (Rumelt, 1984), that originates from causal ambiguity (Reed and DeFillippi, 1990), imperfect information distribution etc., makes it difficult to transfer resources from one company to another and at the same time, maintain the specific value of that resource. Thus, simply acquiring resources will not lead to competitive advantage for entrepreneurs, because it is not possible to acquire all resources and its associated value. E.g. you cannot acquire reputation, some resources are nonappropriable (Dierickx and Cool, 1989).

Theoretically it is difficult to create a competitive advantage based on the acquisition of resources, because the SFM has all ready incorporate the

resource's potential in the price. This follows a "markets always knows everything" logic. However, in the practical world, it is less likely that all information is accessible to all actors. Thus, if acquisition of resources is based on superior information or luck, it can create a benefit for the acquiring part, and thus leading to competitive advantage (Denrell et al., 2003).

However all of this requires that there is a strategic factor market to acquire strategic resources from. There are limited strategic factor markets to acquire resources from at the BoP (Milstein et al., 2007; Seelos and Mair, 2007; Webb et al., 2010). E.g. there are limited consultants that can offer detailed customer and value chain knowledge at the BoP, and there are limited experienced managers available that can be more or less operational from day one. Such resources then ought to be accumulated internally. Therefore we expect little, acquiring of resources in the initial resource management phase at the BoP. That is not to say that junk and ordinary resources will not be acquired, however that will be through a factor market, which will require some sort of subsequent accumulation (internal development) of that resource for it to become a strategic resource.

Accumulation

Accumulation, in contrast to acquisition, is the internal development of resources (Maritan and Peteraf, 2011; Sirmon et al., 2007), and it often requires learning as simple resources develop into more complex resources. The original resource may be the entrepreneur himself, e.g. the knowledge and professional contacts he possess, or the original source may be the context. Regardless of the initial point of departure, the resource trajectoryway is about attracting and combining more resources based on the already existing ones (Brush et al., 2001). The central notion of resource management in the early phase is to develop simple resources into more complex. Said with RBT terminology, develop homogenous resources into heterogeneous resources (Dierickx and Cool, 1989).

Heterogeneous resources between firms, the underlying assumption of RBT, explain how competitive advantage can be created (Penrose, 1959). The argument is that resources should develop from an initial resource base, and small initial differences between resource portfolios will eventually develop into heterogeneous portfolios as the initial resources are deployed and built upon (Wernerfelt, 2011). In the process, the resources becomes causal ambiguous (Reed and DeFillippi, 1990), and so complex (Rumelt, 1984) that they cannot easily be transferred from one company to another and at the same time maintain the specific value of that resource. Managing resources is eventually about increasing the value of resources, through increased complexity (Brush et al., 2001), and thus create heterogeneous resources (Rumelt, 1984), which are difficult for competitors to imitate, or of which there cannot easily be created substitutes. Thus, it is difficult to transform and increase the value of commodity resources, because their complexity remains rather low. However, putting several commodity resources together (Brush et al., 2001) may increase the value of the whole more than the aggregated value of the individual resources, because somewhere in the web of interlinked commodity resources, it somehow

appears an elevated value of the resources (Denrell et al., 2003). Exactly what causes the increased value, is difficult to track, as the resource has become causal ambiguous, and as such the origin of the value cannot be precisely identified and located (Reed and Defillippi, 1990).

Hence, the accumulation, the internal development of resources, may be a profitable resource management strategy. In fact, accumulation may be more cost efficient than acquiring resources due to time compression diseconomies, which essentially says that time, has a cost associated with it, and that reducing the time of obtaining a resource (acquiring rather than accumulating) cost disproportionately (Dierickx and Cool, 1989).

Contexts with high environmental munificence are abundant in critical resources for entrepreneurs to pick up and develop further (Sirmon et al., 2007). As previously stated, the BoP often has limited capital markets, and an uneducated work force (Webb et al., 2010), which indicates that the BoP has low environmental munificence. However, it must not be forgotten, especially because we introduced the terms strategic, ordinary and junk resources that not all resources must have a VRIN standard in order to be a part of a resource management trajectory. There are human beings at the BoP, arguably lacking both literacy and numeracy knowledge, but they have skills, intellect and motivations to develop (Madhubalan and José Antonio, 2007). The point being that there are resources present that may not be regarded as valuable from a western market logic, and they are certainly not valuable enough to be considered services and products in a strategic factor market. However, to say that the BoP is resource scarce on all matters, is to abandon to see the potential in the resources that in fact are present. Seeing the potential in resources normally regarded as junk, and develop that into something of value is called bricolage (Baker and Nelson, 2005).

Bricolage is a strategy when faced with resource scarcity (Halme et al., 2012). Lévi-Strauss (1967) first introduced the ideas of bricolage, which is to make do with what is at hand. After being introduced by Lévi-Strauss, numerous disciplines have conceptualized it, and Baker and Nelson (2005) applied it to entrepreneurial resource construction. Bricolage takes place when resource constrained entrepreneurs in resource-poor environments make do with what is at hand (physical resources, labor, and skills), they challenge the perceived value of a resource combine it with other resources and increase the value of it and can therefore offer solutions where none existed (Baker and Nelson, 2005).

Accumulation of resources points to the “internal development” of resources, which is in contrast to acquiring from an external source. At least for MNEs purely internal development of resources is a view that have been challenged Social embeddedness (London and Hart, 2004), native capabilities (Hart and London, 2005), including the people on the fringe (Hart and Sharma, 2004) and business intimacy (Simanis, 2011) are perspectives on BoP activities that challenges internal processes in the sense that such processes cannot be purely internal. Resources as a protective, internal asset needs to be challenged (London and Hart, 2004). To create positive synergies between the firm and

context at the BoP, internal resources ought to be combined with capabilities found in the context (Sánchez and Ricart, 2010). This tight link challenges the borders between firm and the context.

We expect to see accumulation of junk and ordinary resource into more valuable resources as an entrepreneurial resource management strategy at the BoP. There is a limit to how much resources a firm can manage, thus divesting resources is also part of the initial resource management activity.

Divesting

While the two prior resource management activities were about obtaining resources, either through acquiring or through accumulating resource, the last resource management activity within the structuring phase, is divesting firm-controlled resources. Divesting ought to take place, when the cost of maintaining or controlling a resource surpasses the potential it has to contribute to competitive advantage (Sirmon et al., 2007), which is the end goal of holding a valuable resource portfolio. Due to previous investment in a resource, managers may have difficulties in detaching themselves from it, and continue to nurture a resource that should have been divested. In such cases the resource become core rigidities which hinder competitive advantage (Ireland et al., 2003).

However, because the future value of resource is unknown, it can be difficult to divest the right resources (Miller and Arikan, 2004). Specifically in environments with high uncertainty and low environmental munificence, divesting of resources should be conducted with caution. If divesting the wrong resources, such environments will not easily provide replacements. Moreover, due to the potential in a bricolage process, divesting resources is risky at the BoP, because seemingly worthless resources may turn into valuable resources.

Especially strategic resources ought not to be divested. Again, obviously valuable resources will not be divested. It is more difficult to consider ordinary or junk as potential subject for discarding.

In case of a significant need for cost reduction, it is tempting for managers to fire human resources. However, and especially in environments with low environmental munificence, divesting should be exercised with caution (Sirmon et al., 2007).

Research Design

In general there is lacking research taking a process perspective on resources (Maritan and Peteraf, 2011). We adopt a qualitative research design in this study, because this is useful for studying new and complex phenomena (Eisenhardt, 1989; Weick, 1996). Moreover, how resources are managed in the initial phase of a start-up company (in contrast to MNEs) located in a resource-constrained environment such as the BoP is even less inquired. Despite our little knowledge about this phenomenon, business principles and entrepreneurs are mentioned as a key to solve the lack of basic needs such as access to electricity, clean water, and health services at the BoP. Given the rather large expectations to

entrepreneurs, it is a paradox then that we do not know more about how they manage resources.

Sampling

When targeting the BoP, there is a risk that all developing countries are labeled as BoP. It should not. Most of the BoP is located in developing countries. That is not to say that the entire country should be labeled as BoP. There are often large differences within countries. The developed parts of developing economies may not be as developed as western markets, but they may resemble western markets in the sense that there are capital and labor markets, infrastructure, contracts enforcements and property rights (Webb et al., 2010), and thus there is access to resources to certain degree as we know from a western context. The BoP is resource scarce at a different level compared to the cities of developing countries, and it consists of people with an annual purchasing power parity of less than US\$ 1500 (Prahalad and Hart, 2002). Researchers must not fall in the same trap as some MNEs have, and target the top of the domestic economic pyramid, when they should have aimed for the bottom. Thus, one sampling criteria is that the entrepreneur must target, and be located at the real BoP, which oftentimes will be the rural areas in developing countries.

Another sampling criteria is that the entrepreneur(s) operate within rural electricity, as this is one of the major deficiencies at the BoP, and a prerequisite for poverty alleviation. Moreover, we look for firms that have show strong indication of economic viability and ability to scale. Very few new firms in this sector are economically viable or have been able to deploy rural electrification on a large scale at a rapid pace (IFC, 2012).

Husk Power System, and the entrepreneurs behind, meets our sampling criteria. They are located in Bihar India, one of the least developed states in India, and operate in the rural areas of Bihar. Thus they aim for the actual BoP. Moreover, the size of the electrification challenge is huge in rural India (UNDP, 2011; Zerriffi, 2011). Finally, HPS is unique in the sense that it has expanded very rapidly in a relatively short time period. Indeed, 79 power plants have been installed over a period of five years from 2007 through 2012. Whenever rare and unique events unfold, a single-case study design is appropriate (Yin, 2009). Each power plant provides electricity to one or a few villages, and HPS aims for shareholder profit within a reasonable time. HPS is thus an exception in the rural electrification landscape, and as such it constitutes what could be termed “an extreme case.” According to (Neergaard, 2007), this is defined as a particularly problematic or successful example of a phenomenon.

Data collection and analysis

Data was collected from multiple sources in order to increase the validity of the study (Healy and Perry, 2000). It was collected in rural India during two periods in 2012. The first period included initial semi-structured interviews with one of the founders of HPS and visits to two power plant sites. A follow-up visit, with considerable expansion in the scope of the interviewees, took place approximately eight months later. Data was collected at HPS's headquarters as well as in remote villages of rural India in the state of Bihar. In-depth knowledge was acquired through interviews with the founders and top management, and

these served as the primary source of information. The two founders of HPS, who operate as Chief Executive Officer (CEO) and Chief Operating Officer (COO), were the starting point. They provided a broad overview of HPS's development and strategic decisions, also prior to the formal registration of the firm, which took place in 2007. Additional information was gathered from the Vice President of Operations (VP), who had worked closely with the two founders since 2008. Thus, he provided valuable information that added nuances to the picture of the initial resource management.

All relevant material was transcribed and coded using NVivo. The material was coded in three cycles (Saldaña, 2013). The first cycle was content coding based on resources. From this, two categories emerged; technical and human resources. These two nodes were then coded two times: One for the type of resource; junk, ordinary, and strategic resources. The other one for resource management activity; acquire, accumulate and divest.

Results and Findings

In the following we present three resource trajectories that we observe in the two entrepreneurs', Gyanesh and Ratnesh, initial resource management. The first trajectory includes strategic resources, the second junk resources, and the third deals with ordinary resources. An overview over the initial human and technology resources and the initial management strategy is presented in Table 1.

Resource Management \ Resources	Strategic		Ordinary		Junk	
	Acquire	Advanced technology. Reported in literature	Valuable highly educated students from prestige universities			
Accumulate			Gassifiers from local producer	Local skilled people	Rice-Husk	Local unskilled and uneducated people
Divest						

Table 1. Overview over initial resources and the strategy they are sought managed.

Three different trajectories are identified for resource development in the initial phase. We will follow two types of resources, technical and human resources, and describe how perceived strategic resources are divested before the founders develop junk resources into ordinary resources, and lastly how ordinary resources develop into strategic resources and/or resources available at a factor market.

Trajectory 1: From strategic resource to divesting

Resource Management \ Resources	Strategic	Ordinary		Junk	
	Acquire				
Accumulate					
Divest	Advanced technology. Reported in literature	Valuable highly educated students from prestige universities			

Table 2. Resource Trajectory no. 1.

Human resources

This resource trajectory is represented by arrow no. 1 in Table 2. There are poorly developed strategic factor markets at the BoP. Despite that, Gyanesh and Ratnesh try to acquire resource from a strategic factor market that is located nearby. In order to recruit talented people, Gyanesh visits the elite universities located in the metropolis of India. Students are enthusiastic about this opportunity, and are willing to contribute with their analytical minds and skillset. However they do not turn out as a strategic resource. In fact, they are quite unsuccessful in operating on the ground in Bihar. Gyanesh explains:

“You may be a very popular guy in an IIT [Indian Institute of Technology] . . . But if you are able to translate that skill into building a good team on the ground in Bihar, there is no way to judge that . . . the rules of engagement are totally different . . ., you don’t have good food, you don’t have a place stay, good place to party . . . those are hard realities of life, and your performance goes just shhhh.” Gyanesh

In this case the students are expected, due to their skill sets, and their profile to perform well. In contrast to educating and training people themselves, the idea is that these people have the skillset needed to more or less go directly into daily operations. This is not to say that not some internal development is necessary. However, the main logic is that much of this human resource has already developed into a strategic resource for HPS prior to the entrance in the company. In lack of access to managers through a local strategic factor market, Gyanesh and Ratnesh, go to a nearby strategic factor market for the needed resources. Despite recruiting from the same country, the distance is too far from what is really taking place on the ground in Bihar. Ratnesh says:

“Many IITian and IIM graduates [graduates from elite institutions in India] have been tried here. The thing is that without the support of the local people you cannot operate here.” Ratnesh

After a while they stop recruiting from these places. In fact, this resource is divested, and a different approach to human resources emerges. There is a similar resource trajectory for the technical development, which we present next.

Technical resources

This resource trajectory is represented by arrow no. 1 in Table 2. It was not given that the two founders would end up with a gasification technology as their electricity producing unit, and rice-husk as the primary feedstock for this power plant. Initially and before HPS was formed as a legal organizational entity, the two entrepreneurs tested different technologies. The approach was to look into existing written reports, and to apply this technology to the context in Bihar. Different energy sources and carriers were considered, such as geothermal, micro- and pico hydro and biogas from manure. The most promising of these initial technologies were biodiesel produced from the *Jetropha* plant. However, the written reports that promised profitable yields, did not match what the entrepreneurs experienced once it was applied on the ground. Gyanesh and Ratnesh explains:

*“Whereas biodiesel, well we wasted a lot of efforts and money in that. There are serious issues with that. We don’t have any good technologies with that. *Jetropha* is bullshit. It is complete crap. It got serious issues, from the yield, from the water requirement, and everything. Everything has been misreported. That is one place where academicians, with all apologies to you, have done a lot of bad stuff.” Gyanesh*

*“Our experiments were based on the literature that was available on the net, and it was all you know... Unauthentic. Everything about *Jetropha* was to the extent false.” Ratnesh*

The two founders were not able to convert the text-books recipes into practical solutions at the ground, despite promising numbers from reports they had found on the internet and other sources. They were never able to take these reports and use them as basis for further resource accumulation. They were too distant from the actual situation at the ground in Bihar. Thus all the attempts, and whatever was invested in this, was divested, and the two founders reoriented themselves from the seemingly strategic resources which was available through a strategic factor market to looking at what resources the context provided. In the next section we present how the two founders turned to junk resources, both in terms of human and technical, and developed those.

Trajectory 2: From junk resources to ordinary resources through accumulation

Resources Resource Management	Strategic		Ordinary		Junk	
	Acquire					
Accumulate			Rice Husk	Local unskilled and uneducated people	2	
Divest						

Table 3. Resource Trajectory no. 2.

Human resources

This resource trajectory is represented by arrow no. 2 Table 3. We are in this part dealing with human resources, and we are at the same time labeling it as “junk” resources. This should, under no circumstances, be understood in the context of our view of humans. As such, it is not a categorization of human beings, it is a categorization of firm resources. The label “junk” in connection with human resources, should then be understood as its perceived potential to become a strategic resource for a firm.

After failed attempts with the highly educated students, the entrepreneurs look elsewhere for hiring. They look to the local context they operate in. It turns out that local uneducated people, are the best at collecting money from villagers.

Collecting money for electricity, is challenging, due to the low purchasing power, and also due to the idea that electricity is viewed as a commodity that ought to be provided for free. Previous election campaigns have contributed to this understanding, because politicians have promised free electricity in order to get elected. Understanding this view, understanding how the daily routines and social norms actually work, is crucial in order to create a money collecting strategy that is considerate to both sides. On the one side ensures a high rate of fees collected, and at the same time not upset the relationship between the new activity in the village, the power plant, and the villagers. One of the managers of HPS says:

“Guys who are working here in rural areas are not educated, but are skilled to how to take [collect] money from villagers.” KK

Moreover he says:

“We recruit people locally, for example the rent collector, mechanics are all hired from the same village . . . if there is a problem they manage it.” KK

The people who previously were regarded as “junk”, do now perform a job, that the highly educated students from the prestige universities where not able to conduct. They understand village life and the mentality of villagers, and at the same time they relate to the new firm. The internal development of resources (accumulation) proved more successful compared to acquiring from a nearby strategic factor market. In a similar manner the input to the technical process, the rice-husk moves from junk to ordinary resources, which we will explain next.

Technical resource

This resource trajectory is represented by arrow no. 2 Table 3. The founders knew that they would focus on electricity, however they were agnostic in terms of the technology applied to deliver this commodity to the rural India. After divesting the attempts of a formal approach through applying seemingly promising technologies, they changed their logic. They started to identify what actually was on the ground in Bihar, and realized that there is almost a perfect match between the lack of electricity, and rice farming. Gyanesh explains how the same area that lacks electricity at the same time is the main producer of paddy, which leaves rice-husk as a residue:

“If you look at this map. It maps the pr. capita electricity availability in different parts of India. ... [T]his is the area where we produce a lot of rice, and yellow is the area of low electricity availability... [P]addy, which leaves rice husk essentially, which has not much use, can be burned essentially one way or the other. So it is a very good match.” Gyanesh

The two founders saw the potential in the available junk resource, rice-husk. The complete technical system (gasifier, filters, generator, distribution) did not exist at the time. They did not have any written reports to guide them. Rather, most of the technology had to be created through an experiment, with uncertain result. Gyanesh explains how they started working on creating a functioning technology for electricity production:

“[W]hat we were doing was totally new. ... Even when we set up the plant, we didn’t have the technology. Setting up the plant itself was trying to get that technology to work, get that thing to work. So it wasn’t a thing that you see somewhere, get somewhere. Setting up the plant in itself was an experiment.” Gyanesh

Rice-husk was used as the premise provider for the subsequent technology development, and as such the resource was moved from junk resource to ordinary resource. The two founders also developed ordinary resource into more valuable resources.

Trajectory 3: From ordinary resources to strategic and (strategic) factor market

Human resources

This resource trajectory is represented by arrow no. 3 pointing left in Table 4. The two founders always had great ambitions in terms of scale and reach. Thus, an organization consisting of, amongst others, middle managers, engineers,

mechanics, had to be created. They recruited people that can be considered ordinary resources. These were recruited regionally, and they would typically have a basic education and skill-set. Not to the extent that they could be regarded as a strategic resource, however more than that they would be regarded as “junk”. The two founders would extend and improve their skills. Gyanesh explains:

“We have to create every employee ourselves. We don’t have the luxury hiring anybody from the street right? That would be my engineer, or be my mechanic. We can’t afford to pay the normal money that is paid in cities, we can’t afford to give people the kind of accommodations they ... you go to the field and you will see. A lot of people [employees], they live in very simple offices, guesthouses, and we work like that. It is about collecting all that, it is about creating a culture that somehow sustains that kind of a lifestyle.”
Gyanesh.

It is important that the employees would possess the right attitude that kept them staying in the area, on the ground, for a longer period. This allowed further accumulation of their skills. Gyanesh explains what type of people is needed.

“So we don’t necessary need very competent people, we need more like diligent people you know, excited people.” Gyanesh

The managers, technicians and engineers develop, into becoming a strategic asset. It is the internal development (accumulation) of these resources that results in an improved resources, a resource that can be argued is strategic. The regional offices – a result of the education and training of employees – were very much self run without the daily support from the two founders. The regional offices, and the employees there, in combination with an agile team consisting of more advanced mechanics and engineer, who had the capacity to both deal with rural village life and at the same time operate and repair a power plant created to fit the local conditions, are one of the key strategic resources the two founders developed. This is a resource, which is hard to copy and difficult to imitate.

At the same time, some of these trained people could potentially be attractive for other firms as they have developed technical as well as leadership competencies. This can be considered to be a strategic resource for other firms operating in the area. We did not hear many examples of employees left the firm for other firms. However, the possibility is there.

The founders have then done two things. First they have internally created a strategic resource from an ordinary (vertical arrow no. 2 pointing left). Moreover, they have also created a factor market for other firms interested in the competencies held by the middle managers/mechanics/technicians at HPS. The latter is probably not done on purpose. However the next example regarding the technical resource, will highlight the fact that a (strategic) factor market emerges based on the resources HPS develop in the intersection between internal and external resource development.

Resources Resource Management		Strategic		Ordinary		Junk	
Acquire				Gassifiers from local producer			
Accumulate		Local skilled people					
Divest							

Table 4. Resource Trajectory no. 3.

Technical resource

This resource trajectory is represented by arrow no. 3 pointing upwards in Table 4. After deciding to leave existing technologies such as biodiesel from the Jetropha plant, and rather build a new technology bottom with a junk resource such as rice-husk, the two founders needed to develop a single-fuel gasifier. At that time in Bihar there were several dual-fuel (running on both diesel and producer gas) producers gasifier due to public support mechanism supporting the production of dual-fuel gasifiers. Gyanesh and Ratnesh had decided to stick to rice-husk as feedstock for their technology, and did not want to mix with diesel. Therefore, they needed to develop a single-fuel gasifier, and they asked a dual-fuel producer if he was willing to shift his production capacity towards dual-fuel systems. Gyanesh explains why the chosen gasifier producer was selected:

“He was doing exactly what we wanted to do ... [H]e was willing to experiment. So that what was special with this guy. That he was ok with experimenting, because he didn’t have anything himself, right. So he was ok with experimenting.” Gyanesh

Besides that he was willing to experiment, he was also willing to work on the directions given from Gyanesh and Ratnesh:

“That is our challenge, and that is the reason for our success... a) We have to bring a workshop owner to the level so he can build gasifiers. b) He says I don’t have any money; I don’t have any capital to the project. All right, I will give you all the materials. So I have to give him all the materials, be very closely involved with him. And make sure that he is getting enough business. Otherwise he will stop. ... But the big advantage we get is: We know exactly what we are getting.... We don’t have to worry about if the supplier will make it to this speck or that speck or this or that. He is our own.” Gyanesh

The gasifier producer is not part of HPS, however he works so closely with Gyanesh and Ratnesh, that he can almost be considered to be part of the organization. His problems, would become Gyanesh and Ratnesh' problem. They provided capital and enough orders for him, as long as he was willing to experiment along the dimensions set out by the founders. His product was originally ordinary. He produces dual-fuels systems like numerous others do at the time in the Bihar region. However, he joins a resource trajectory that is so closely linked to the founders that it can be considered internal development (accumulation).

The starting point of the arrow no. 3 pointing upwards in Table 4, should probably be placed on the boarder between accumulation and acquiring. However, it should not be placed in the acquiring box, because the product (factor) the entrepreneurs were interested in did not exist at the time. It was not readily available at a strategic factor market, nor in a regular factor market, thus we placed it in the box accumulation, knowing that this can be a subject for discussion. This is a point in and of itself that we will start with in the next section, the discussion.

In the beginning of this section, we presented an initial snapshot of the initial resources presented in Table 1. Table 5 gives an overview of the resources after the initial resource management activities has taken place, and Table 6 provides an overview of the initial resource trajectories, which we will discuss next.

Resource Management \ Resources	Strategic		Ordinary		Junk	
	Acquire			Gassifiers from local producer		
Accumulate		Local skilled people	Rice-Husk	Local unskilled and uneducated people		
Divest	Advanced technology. Reported in literature	Valuable highly educated students from prestige universities				

Table 5. Overview over resources after initial resource management.

Resources Resource Management	Strategic	Ordinary	Junk
Acquire			
Accumulate	↓ 1	← 3	← 2
Divest			

Table 6. Overview over initial resource trajectories.

Discussion

From strategic resource to divesting

Somewhat surprisingly we see that the two entrepreneurs start off with applying resources from a strategic factor market. Both human and technical resources are sought imported to the BoP from a different market. They try to acquire resources from a nearby strategic factor market, from the larger cities of India, and then implement that to the BoP setting. It may be the case that there is no strategic factor market at the BoP (Milstein et al., 2007; Webb et al., 2010), however it should not be drawn from that strategic factor markets will not be a resource management strategy for entrepreneurs at the BoP. However, little success can be traced through this strategy. In fact, the process of taking something from the outside and bring it in to the BoP setting, resembles what the BoP literature suggests for MNEs entering the BoP context. As such resources will have a more western market characteristic by being technical relevant, and human resources have a solid academic background. However this is not enough. The resources must be contextualized to some degree. Local entrepreneurs, not only MNEs, must make sure that they become native and develop native capabilities (Hart and London, 2005).

One of the entrepreneurs, Gyanesh, is originally from India and Bihar. The last years prior to his entrepreneurial activities in rural India, he lived and worked several years in Los Angeles and worked in the semi-conductor industry. Being influenced by the engineering logic and the professional approach to conducting business could potentially influence the choice of taking a quite formal approach to the initial resource management by trying to acquire the best possible human resources and technical solution. As such, the two entrepreneurs were caught in the same trap as many MNEs have been; transferring too much western market thinking to the BoP context, and expect it to function there too. Gyanesh also emphasize the importance of contextualizing everything:

If you want to play in these parts of the world, go and set up your business, start fresh, contextualize your product to the need, bring down the cost, cut down on electronics, cut down on the funky...just change the whole idea of quality and reliability, and that is when you will have it. Gyanesh

After a while, they divested the resource, and started over again with a different approach, contextualizing everything. This brings us to another point. Sirmon et al. (2007) emphasize the risk associated with divesting when there is low environmental munificence and uncertain environments. The logic resonates well; if there are not many resources present, and it may be difficult to get a hold of resources, considerable caution should be exercised when divest something you control, because changes may occur that will make the resources more valuable. If they are divested, the real option is lost. Also following a bricolage logic (Baker and Nelson, 2005), the entrepreneur may see some other use of that resource somewhere in the future.

Regardless of the potential negative effects of divesting resources, it can be the right decision to shed resources, as it was in the above-presented case. Two aspects are worth highlighted. First, because the resources here are acquired from a nearby strategic factor market, it means that the price of the resource does not reflect the situation on the ground where the resource is sought implemented. Thus, when going to nearby strategic factor market, and especially when the target deployment of resources is at the BoP, where there is little purchasing power, the risk of wrong pricing is even higher. We are not saying that it cannot be done, however the risk of acquiring the wrong resources to a price that cannot be calculated home, is quite high. Thus, if strategic factors are imported from other markets, divesting may be a very likely resource management activity, and it should be done quickly. If not, too much cost will accumulate, which will hamper the parallel resource development. Second, entrepreneurs ought to be very cautious about the inherent characteristics of such resources. Do they have the features that will match the lifestyle of the BoP? We have seen that the human resources from prestigious universities were not capable to accept and adjust to poor food, poor living standards, different social norms etc. Likewise, the technical solutions, despite being promising on paper, were not applicable to rural village life. To sum up so far; when acquiring resources from other strategic factor markets than where it is supposed to be deployed, there is a risk that the price of the resources is incorrect (in disfavor of the purchaser), and that the resource miss critical characteristic for it to function properly. Thus divesting may be more critical, and more important than previously reported (Sirmon et al., 2007). Also it must be divested at an early enough stage before too much cost accrues.

From junk resources to ordinary resources through accumulation

Again we stress the connotation; when we characterize human beings as junk resources, it does not reflect our view on human beings and the poor, it reflects the *perceived* role those humans have in contributing to a competitive advantage through being a strategic resource.

We see that junk resources such as rice-husk and human beings without training and education, become ordinary resources. The entrepreneurs refuse to see the limitations of these two resources (Baker and Nelson, 2005) and apply them as input to a process where both technology and human resources are developed.

The case of rice-husk needs more elaboration. Rice-husk is undoubtedly a resource. In this case it is also something more. It is the premise provider for the subsequent technology development. It is only through successful technology development of the entire power plant that is designed for rice-husk gasification that the junk resource, rice husk, is elevated to an ordinary resource. It is not a strategic resource, due to the abundance of it. Nevertheless it has moved from a free junk resource, to a resource with a price attached to it. From a resource point of view, this shows how entrepreneurs, can choose to involve local context and circumstances in their business. They can do that by choosing some factors in the context, in this case rice husk, as premise provider for the subsequent resource accumulation. When extant BoP literature highlights embeddedness and local presence as important factors at the BoP, it is often with reference to the social structures, because informal social structures often stronger than formal ties at the BoP (Hart and London, 2005; Hart and Sharma, 2004; London and Hart, 2004). We do not neglect that. However, we will argue that the concept of premise providing factor is a different approach to being deeply engaged and committed to the local context. By choosing such factors as premise provider for subsequent resource accumulation, the entrepreneurs lock themselves to the context in a different manner than what can be explained through social ties.

From ordinary resources to strategic resources and (strategic) factor markets

The term “internal development”, which basically is the accumulation of resources (Sirmon et al., 2007) can be challenging to apply in a context where actors are urged to engage deeply with context and actors in the context from day one (Hart and London, 2005; Hart and Sharma, 2004; London and Hart, 2004; Milstein et al., 2007). The entrepreneurs’ cooperation with the gasifier producer, who originally produced dual-fuel systems, is a good example. Gyanesh and Ratnesh meet this guy more or less randomly, and they start a technology project, with the aim to produce single-fuel gasifiers for rice-husk. The relationship between the supplier of gasifiers and the two entrepreneurs is very close; “hand in glove” as Gyanesh puts it. This cannot be regarded as acquiring resources, because there is no resource to acquire in the first place. Nor is it purely internal development. The gasifier producer does not have a ready-made gasifier suited to the ideas of the entrepreneurs. What he does have is an attitude showing willingness to experiment. The experiment shows how deep interaction with players in the local context can turn out. What actually takes place is accumulation of resources for the entrepreneurs, and at the same time creating a (strategic) factor market. The entrepreneur will continue to use this guy as a supplier, thus acquiring resources from him. However, when this is available at the market, either as a factor market or a strategic factor market, the product is customized to the entrepreneurs. Thus for Gyanesh and Ratnesh they may have created a *strategic* factor market because the product aligns with other resources they possess or will obtain in the future. For others who do not have,

or will, create the supporting resource portfolio around such a gasifier, it may simply be a factor market.

The main argument of Simanis (2011), is that, in contrast to the early BoP literature, there is not market to tap. One cannot simply enter a well-developed market at the BoP, expecting the people there to crave the same things as customers in the west will do. The actors operating at the BoP must create the market. The example with the gasifier producer is an example of how a (strategic) factor market is created. What is interesting to note is that at the same time resource accumulation takes place for the actor who is willing to explore and integrate the voices of people at the fringe (Hart and Sharma, 2004), develop revolutionary routines in order to include the poor (Milstein et al., 2007), becoming socially embedded (London and Hart, 2004), and develop native capabilities (Hart and London, 2005). There is not a disharmony between accumulating resources for the entrepreneur and at the same time create a market. Most likely the market that emerges fits nicely to the rest of the entrepreneur's resource portfolio, if the entrepreneur choose to invest in creating a market.

Arrow number 2 in Table 6 points in two directions. The arrow pointing upwards reflects the process just discussed. The arrow pointing left reflects the process of which Gyanesh and Ratnesh employ ordinary resources, people who have basic training and an education, into becoming strategic resources for the firm. In contrast to the resource acquired from strategic factor markets, this resource has some inherent characteristics that make them capable of developing further, and into a strategic resource.

Conclusion

A shift of mentality in the BoP debate from the large MNEs tapping an existing market (Prahalad and Hammond, 2002; Prahalad and Hart, 2002), to the local BoP producer who needs to create his future market (Simanis, 2011), also requires a shift in the way we view resource management at the BoP. First of all we have seen the importance of timely divesting of resources when they origin from a nearby strategic factor market. Second, close interaction with local players at the BoP can simultaneously be a process of accumulation of resources and the creation of a strategic factor market. Third, the managing and elevation of local resources, ordinary and junk resources, seems to be vital for entrepreneurs creating a resource base at the BoP.

Limitations

Our Research design accompanies certain limitations. A single-case study is suitable to go deep on certain matters, but we are not able to draw general conclusions that reach across the entire BoP spectrum. Nevertheless, we believe our findings opens up for interesting avenues for future research.

Suggestions for Future Research

Longer and multiple case studies as well as deep ethnographic studies of entrepreneurs both prior to, and immediately after a formal organization is

established, can help us understand more about the entrepreneurial resource management process at the BoP. Especially, we believe the focus on ordinary and junk resources can generate new and interesting findings. It should not be forgotten that most resources, also firm resources are ordinary and junk. Entrepreneurs do often not start out with a plethora of strategic resources. Thus the process of elevating ordinary and junk resources, the most common resources, into something of a strategic resource ought to be understood in more detail. Moreover, little attention has been given to the divesting of resources. Expensive and difficult to acquire resources ought to be divested with caution, however due to the cost such resources accrue, it may be important. But again, most resources are ordinary and junk resources, and there is a limit to how many resources a firm can put into efficient use. Thus most likely ordinary and junk resources also need to be divested from time to time. The process of divesting ordinary and junk resources can be an interesting avenue for future research.

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