

Rethinking entrepreneurship education in emerging markets – replacing vision by real strength

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Abstract

The paper suggests rethinking the entrepreneurship education in emerging markets – and to design an educational program that steers away from a copy and paste approach in pursuit of the countries' real strengths. To do so, this paper discusses a possible new curriculum for entrepreneurship in low-tech sectors to assist entrepreneurs in harvesting the economic potential of their home grounds and to allow them to succeed internationally. This conceptual study was enriched by interviews with senior members of leading international institutions including: Massachusetts Institute of Technology, Harvard Business School, Rensselaer Polytechnic in New York, scholars out of various Russian and South African universities and The Kauffman Foundation for Entrepreneurship, in Kansas City.

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Introduction

Although entrepreneurship is a vital function of all aspects of economic life, it is largely associated with high-technology activities in advanced economies (Yamakawa, et al., 2008; Zahra and George, 2002). And indeed, very little is known about traditional low-tech sectors and their entrepreneurial activities (for studies on low-tech see e.g. Evers, 2011, Belso-Martinez, 2006, Sullivan-Mort and Weerawardena, 2006). On the other hand, policy makers feel compelled to invest in support programs to raise the rate of entrepreneurship. This fact is somewhat surprising, given that the high-tech sector has limited impact on e.g. job creation, particularly in developing markets¹. Despite a declining contribution since the 1980s low and medium-tech industries contribute over 60% of employment in OECD countries and participate strongly in value creation (e.g. Kaloudis et al., 2005).

What eventually triggers entrepreneurial activity is still largely unknown. Yet, there is widespread agreement that a well-functioning eco-system including research institutions, training facilities, capital providers etc. are fostering the creation and survival rate of start-ups. Also, for high-tech start-ups to succeed, a steady supply of highly educated workforce or existing production knowledge in new technologies is most relevant - a situation unlikely to be found in many developing economies. However, science-based and high technology entrepreneurship is seen by many of their governments as the most promising way to stimulate economic growth and create employment – and ultimately alleviating poverty (Herrington et al, 2008). Driven by the dream of a rapid economic boom triggered by the application of promising technologies, a lot of energy and money is spent on areas which will find it rather difficult to flourish in these countries.

By joining the race towards the commercialization of new technologies, many developing economies not only invest money into areas with highly uncertain outcomes - their entrepreneurial talent might be diverted away from making use of the opportunities their very own markets have to offer, largely due to their unique resource endowments (e.g., high stocks of human capital, low stocks of financial capital) (Manev and Manolova, 2010). Instead, many of these economies are driven by classical low-tech industries, with huge potential for innovation in these sectors (e.g. Hirsch-Kreinsen, 2008). After identifying where start-up entrepreneurs could succeed in emerging markets, the question is how policy makers could best support them? Often, the solution was found in start-up grants and credit indemnification schemes; however with little or no effect (e.g. Gstraunthaler and Cramer, 2011). There is agreement that targeted educational activities assist potential entrepreneurs to stand the test of markets. Entrepreneurial capacities, like innovative thinking or seeking and pursuing opportunities (Lumpkin and Dess, 1996, Zucchella et al, 2005) are not static, but need to be built and carefully developed to become a source for competitive advantages (Weerawardena et al, 2007). Here, tailor-made educational programs can help to alleviate the situation, especially when the rate of entrepreneurship in the society is low and role-models are unlikely to be found.

When looking at the Russian Federation or South Africa as two examples of emerging markets, their economies are dominated by large corporations in agriculture, the mining sector and manufacturing. The Global Entrepreneurship Monitor (Harrison et al, 2010) ranks both economies as efficiency-driven, indicating that their economies are characterized by a pursuit of higher productivity through economies of scale. Both nations rank below the average score of other efficiency-based countries. It is true, that both countries have a significant informal sector, but still show differences to their peers. Only 22.7% of the Russian respondents indicate that they have the necessary knowledge and experience to start a company. The situation is somewhat better in South Africa, where 44% believe they have the necessary capability. This number has increased strongly from 35% in 2009. Still, the GEM report 2010 on South Africa concludes that “questions also need to be raised about the quality of early-stage entrepreneurship in South Africa, particularly regarding the business and personal management skills of the entrepreneurs” (Harrison et al, 2010, p 18).

Equipping young entrepreneurs with the skill-set needed to harvest the potential of their home grounds would ensure that more value-adding activities remain in the country and would create sustainable jobs. This was the reason for the

¹ The low-tech sector separates itself from high tech by its low R&D intensity of under 3% (for the band between 3% and 5% OECD uses the category of medium-low tech).

collaboration of a public organization in South Africa and a researcher of the University of Cape Town to find a customized way to strengthen entrepreneurial activity. To do so, this paper discusses a possible new curriculum for entrepreneurship in low-tech sectors to assist entrepreneurs in harvesting the economic potential of their home grounds and allow them to succeed internationally. This conceptual study was enriched by interviews with senior members of leading international institutions including: MIT, Harvard, Rensselaer Polytechnic in New York, scholars out of various Russian and South African universities and The Kauffman Foundation for Entrepreneurship, in Kansas City. The increasing liberalized world trade and consequently the arising globalized 'new world order' offers great opportunity, especially for developing countries.

This paper proceeds as follows: firstly, relevant literature is discussed in the next chapter. Afterwards, the paper discusses the identified specificities of emerging economies which should be addressed by the curriculum. Finally, the paper describes the suggested curriculum and concludes with final remarks.

Literature review – what constitutes entrepreneurial success?

Since the demise of Fordism, most studies about entrepreneurship resort back to Schumpeter's now 100 year old work. Schumpeter (1911) identified the entrepreneur as the driving force of change through breaking down old ideas and concepts in favor of new ones through the ongoing process of 'creative destruction'. In a later work, Schumpeter (1934, p. 66) studied entrepreneurial activity and listed five categories of action: 1. The introduction of a new good or quality of a good; 2. The introduction of a new method of production - something as yet untried or untouched in an industry; 3. The opening of a new market; 4. The utilization of some new source of supply for raw materials or intermediate goods; 5. The carrying out of some new organizational form of the industry. As early as Schumpeter, innovation was seen as a vital part of successful entrepreneurial activities. But how do companies achieve these objectives? Previous literature has identified a number of topics that show a high impact on entrepreneurial success. Two branches can be distinguished: one stream of research focuses on behavioral elements of internationally successful entrepreneurs (organizations, groups or individuals), while another string compares entrepreneurship in different national contexts. A rather large body of literature identifies access to technologies and its effective application as make or break (Eisenhardt and Martin, 2000). Other studies focus on the inner qualities of the entrepreneur and their influence on entrepreneurial success, like flexibility, responsiveness and the capability to innovate and developing knowledge. Also, building up or gaining access to networks of resources, be they tangible or intangible, creates competitive advantages (Zarah and George, 2002; Noteboom, 2002; Weerawardena et al 2007). Ultimately, firms carry out innovation along established technological trajectories and see innovation as a routine behavior which allows keep newcomers at a distance (Schumpeter, 1942; Bell and Pavitt, 1993; Pavitt et al., 1999). There are essentially three ways of achieving technological progress; incremental innovation, radical innovation and discovery. In line with Schumpeterian waves or general purpose technologies (Evenson and Kislev, 1976; Jovanovic and Rob, 1990; Bresnahan and Trajtenberg, 1995; Galor and Tsiddon, 1997; Aghion and Howitt, 1998; Helpman and Trajtenberg, 1998; Boldrin and Levine, 2001), most entrepreneurial success rests on incremental innovation, sometimes even with a radical touch. This process is referred to as creative accumulation (Archibugi et al., 2012; Pavitt et al., 1999; Malerba and Orsenigo, 1995). Knowledge of such trajectories and sectoral innovation systems is therefore vital for entrepreneurial success.

International entrepreneurship has received increased attention and research stresses the importance of preconditions for the emergence of the international new ventures (e.g. Kiss and Danis, 2010; Naudé and Rossouw, 2010). The majority of studies focused on the internal and controllable determinants of export performance (Zhao and Zou, 2002). In their fundamental contribution to theory of international new ventures, Oviatt and McDougall (2005) identify their advantage in their ability to discover imbalances of resources between countries and in creating markets

where none existed. Surely, for international venture creation, a global mindset combined with a vision towards international markets is essential (Harveston et al., 2000). Particularly for internationally oriented companies, entrepreneur-specific capabilities like building up and maintaining an international network have proven to be of vital importance for the success of new ventures (Ibeh, 2003). Other research focused on the accumulation of knowledge and the learning capabilities when start-ups go global (Johanson and Vahlne, 1977; Jones and Coviello, 2005; Fletcher and Prashantham, 2011). However, there is uncertainty about how these firms learn, and what they should learn (Zahra, 2005), but not on the importance of learning for growth-oriented companies per se (Lumpkin and Dess, 1996). The literature proves that one of the most important sources of knowledge for prospective entrepreneurs - is previously generated experience - even more so when companies aim to succeed in international markets (Aspelund et al, 2007). Therefore, many of the aspects of the curriculum were designed for experience-based learning.

As already mentioned earlier, there is surprisingly few insights available about specifics in the low-tech sector. Some studies do provide valuable insight into the low-tech sector of high-tech countries (e.g. Maskell, 1998; Palmberg, 2004; Tunzelmann and Acha, 2005). Others study the sector in emerging markets (e.g. Dietrichs, 1995). Some of these studies, however, show interesting and remarkable differences to the high-tech industries. Through open systems strategies for example, a sponsor diffuses its technology and pushes towards standardization in an industry - or in high-tech settings at least. Lecocq and Demil (2006) found that in low-tech industries, open access to technical knowledge triggers a wave of new market entries of new players. Also, the average size of the firms in the industry decreases due to vertical specialization. Evens (2011) suggests that many of these attributes are not specific to traditional low-technology sectors of the economy. This might be true, and findings like Lecocq and Demil (2006) points towards a different market environment which demands an independent study.

Identified challenges

The creation of the curriculum started by identifying key challenges start-ups in the low-technology sector in emerging markets are facing.

The key points are subdivided into:

- international market-related and technological challenges
- Low-tech specific challenges
- Challenges specific to the development country's environment

International Market-related challenges

International active start-ups face three distinctive challenges: distance, context and resources (Isenberg, 2010). Due to their global presence, controlling the supportive infrastructure becomes more and more difficult with size and managing skills for key personnel are often falling short of this enhanced complexity. Also, operating in a market from a geographic distance makes it very difficult to understand what moves the markets and how competitors act. In addition to that, the distance leaves global entrepreneurs struggling with different culture, language and political systems. Also, doing business on an international scale puts entrepreneurs in contact with different contexts, like unknown judicial systems (tax or business law) or different labor systems.

Innovative start-ups will depend on the application of new technologies for existing industries. Thereby, these new ventures will face the need to critically evaluate the possibilities of upcoming technologies and assess how they could

add value to existing industries. Understanding which technologies are up and coming and identifying their potential applications are one of the most prominent skills.

- The timing of market entry

To penetrate a market, the entrepreneur must carefully time when to launch a product to achieve maximum impact. Hence, timing relies on an intimate knowledge of the market and consumer needs.

- Balancing technical challenges with the sale side

Most young entrepreneurs are too focused on the technical sophistication of their product and fail to understand market realities. Most importantly, there is little knowledge about marketing and aggressive marketing strategies. Thereby, many entrepreneurs miss the opportunity and lose valuable time, which might indicate the end of their entrepreneurial activities. As one of our entrepreneurs worded it: "We never were aggressively enough. We didn't throw enough resources and attention in sales and marketing. So many entrepreneurs have that problem. If you don't have anybody whose brain works in that way (marketing), you won't make it. I am terrible at sales".

- Harvesting the benefits of social networks and alternative marketing techniques

Also, there is currently a wide lack of knowledge on how to use modern marketing techniques like mailing lists or social networks. The teaching curricula of most business school degrees in developing nations fall short of this emerging topic, leaving prospective entrepreneurs struggling with this cheap and effective means of communication.

Low-tech specific challenges

Low-tech companies are often large ones and compete in highly competitive markets. Also, they depend on a strong supply chain, and connections to their clients and suppliers are tight. We identified a number of low-tech specific challenges a curriculum should target.

- Understanding the dominant business models

For prospective entrepreneurial activity to succeed in providing value adding products and services to existing and profitable industries, a deep and detailed understanding of their business models is of vital importance. Most importantly, these industries combine various value-adding activities. Entrepreneurs need to understand which parts of the low-tech industries create most value to place their products and services accordingly.

- Understanding the decision making process

Decision-making in low-tech companies is often highly institutionalized. Also, due to the dominance of larger corporations, there is lot of potential for efficiency gains in non-core activities. Approaching the right people at the right time is essential to succeed in the industry. As one of our interviewees put it: "You have to understand decision-makers. Where are they in their position? What are they looking for? I wasted lots of time by bonding with the wrong people. You have to cultivate your relations!"

- Understanding the specifics of the market

Whereas high-tech start-ups target the markets that are often non-existing yet, low-tech industries do business in highly competitive markets. Thereby, alliances are vital to maintain the business processes. The driving forces for competitive gains depend strongly on the industry. In the food processing industry, firm productivity is associated with the quality of management and foreign ownership linkages. In textile manufacturing, firms raise productivity levels through importing new machinery and through research and development (Goedhuys et al, 2008).

- Understanding innovation behavior of low-tech companies

Most of the innovation that happens in low-tech companies is incremental. Product improvement happens in small steps. Other companies seek higher sales and success on new grounds with market-induced product innovation. Thereby, understanding consumer demands and fast reaction towards changes are vital skills. Mostly absent are radical approaches to innovation. Also, the competence necessary to innovate is specific to individual industries (Fai and Tunzelmann, 2000; Malerba, 2004), often referred to as 'sectoral systems of innovation' (Malerba, 2006). In a similar vein, the companies active in an industry form part of a larger system of organizations and institutions with which they share their knowledge. This implies little receptiveness to new and unknown technologies unrelated to previously used technology.

- The companies' knowledge base

Knowledge is a key driver for low-tech production (von Tunzelmann and Acha, 2005). However, low-tech companies run mostly on practical knowledge. The production processes must be efficiently organized, not too complicated and resistant to failure and is often generated out of trial-and-error runs. Most importantly, time-to-market is a critical factor. Refitting production lines need to be quick and possible for the workers on the spot.

- Control over the value chain

The control over the process chain and logistics is a prerequisite for a stronger market orientation as well as the flexibility of the operating processes. This ability is very often a feature of the type of a service-oriented company, particularly for industries strongly depending on time. Turnaround times e.g. in the fashion industry are very short and the ability to deliver in time is crucial, due to fast changing fashion trends. This also includes transit time for shipments, the efficiency of port infrastructure and customs services.

- Knowledge carriers and dissemination of knowledge

Most innovations follow a stepwise introduction of new production and logistics techniques. The technical knowledge in low-tech industries is held by engineers, technicians, master craftsmen and qualified workers. They are also a vital source of innovation. A similarly important knowledge base are third organizations, be they suppliers, customers or otherwise related to the production process. To allow for the dissemination of knowledge across organizational boundaries, a large degree of co-ordination, communication and trust is necessary. Breaking into these well-established systems is often very difficult for new companies.

- Innovative capability

The company's existing knowledge is the pathway for its further innovation activities, and is often described as the company's 'absorptive capacity' (Teece and Pisano, 1994; Teece et al., 1997). As low-tech companies are characterized by their low R&D intensity, there are few resources dedicated to the generation and acquisition of new knowledge. Due to path-dependencies, companies often struggle to incorporate innovative activities from outside their network's

boundaries. In fast growing, highly competitive markets, this capability is even more decisive. To be successful, new services and products need to take these path dependencies into account.

- The Interrelationships with the high-tech sectors

In certain situations and projects, low-tech companies are also connected with the high-tech sector. Is it as a customer for customized technological application or as a partner offering trial-and-error playgrounds.

Challenges specific to emerging markets

- Getting access to key personnel

A company stands and falls with the right combination of talent. Yet, it is rarely that bunch of school-time friends which make up a winning team and turn into a successful company. Most entrepreneurs struggle to make the shift to becoming a boss and to take responsibility for the performance of other people. Once an entrepreneur has identified the need for a specific skill set, he or she ventures out to find the right person. Yet, as the start-up companies are mostly short in resources, it is difficult for them to offer a market-related salary to attract the talent they need. Due to the dire lack of talent in many of the emerging economies, e.g. people with the necessary skills to operate on a global base are difficult to find – and often too expensive to maintain. “Sales people in the end are useful. But there is a cash-flow problem. It is essential for a degree in entrepreneurship to discuss how you manage that problem when you need a sales person but you can’t afford it. Here in South Africa, we don’t have enough sales people with experiences in international markets. Those you get won’t work on a commission base only”.

- The time lag of inventions

Due to the distance of many emerging markets to Europe, the US or China, timing has been identified as a major issue for many prospective entrepreneurs. Getting the point of market entry right is particularly difficult for geographically dispersed countries, as the local market for technological novelties is lagging years behind and it seems difficult to balance the opportunities of the international markets and the needs of the local markets.

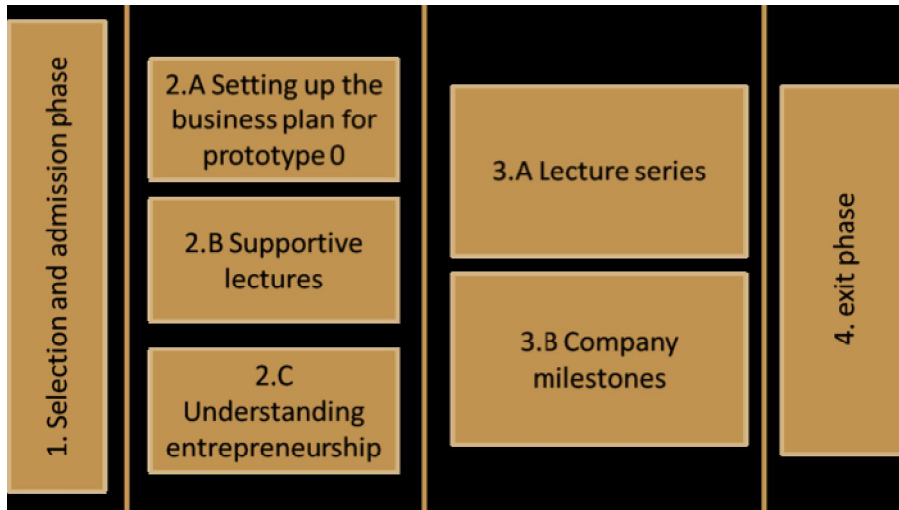
- No center for gravity

For high technology to strive to be successfully commercialized, entrepreneurs rely on a well functioning eco-system. These eco-systems consist out of research institutions providing new ideas and education, support structures like business incubation and providers of capital and market related knowledge, like venture capitalists. Well-established eco-systems like Silicon Valley or Boston attract talent and entrepreneurial mindsets and managed to achieve lasting impact on their economies.

- Culture

A final, deeper going reason for a lack of entrepreneurship in many developing nations is rooted in cultural constraints. Whereas some cultures are generally more likely to create entrepreneurs, other, more collectivist and less individualistic cultures are less likely to do so. Exposure to international practice could certainly help closing that gap.

The program



The program is designed around a methodology which allows for entrepreneurial experiences and trial-and-error learning and minimizes classical business school education to the absolute necessary minimum. In traditional business models, companies first established a market base in their home countries. Once they succeeded there and had a stable supply of financial resources, they ventured on and slowly – step by step – approached other markets. Today's entrepreneurs think globally by spanning their business activities over national borders. This program is designed to foster such thinking and equip prospective entrepreneurs with the necessary knowledge base to succeed.

Selection of students

In many top institutions, which offer entrepreneurial training, being accepted as a student to the hosting institution (MIT, Harvard Business School, etc.) is the first hurdle to pass. The overall academic merits are on such a level that would guarantee that the entrepreneurial program would only choose from the best and the brightest. Most developing countries are not in such a privileged position. Instead, the focus on academic achievements should be rounded up by previous industry experience. In fact, it might be a pre-requisite. The task is to look out for the geek in the blue-collar: marrying industry experience with an extraordinary mind.

- Does the person possess a sense of grounded reality?

On their way through the program, and as their business plans mature, the students will regularly be forced to question their own ideas and to abandon paths that they have taken. To do so, students will need to have enough mental flexibility and a grown feeling for the environment in which they operate to allow for regular reality checks.

- Has the person previously taken risks?

Entrepreneurship is all about taking risks. People who are intrinsically risk averse won't ever opt for the uncertainty and hardship of entrepreneurship and always prefer the risk-free employment over entrepreneurship. Yet, it would certainly be wrong and shortsighted to equip the program with mindless risk takers. Rather, it is all about mindfully taking on the right risks. Previous experience in running an own business, for example, would be a suitable proxy. Not the bungee jumping trip to New Zealand...

- Does the person have leadership qualities?

Leadership is an essential aspect of successful entrepreneurs. The students will prove their ability and previous experience in leadership to the selection criteria.

In addition to the approaches discussed above, it is suggested to widen the criteria and to additionally apply psychological measurements. Psychological cognitive measurement approaches have achieved stunning results and are applied for multiple purposes, e.g. selection mechanisms for top-level employees. These tests rely on a large data base which allow testing for characteristics associated with future entrepreneurial success.

- Project-based internships

One of the reasons for the high failure rate of start-ups is the often-lacking entrepreneurial experience of prospective entrepreneurs. Right from the start, the students will need an opportunity to set their understandings and expectations of the work of an entrepreneur straight. To bridge the lacking experience, a project-based internship for the successful candidates would be very helpful to confirm that this is the route they want to follow. For students with no prior experience, it is considered to establish internships in companies before they get accepted.

Micro-managing entrepreneurs and tracking the success: Setting up the business plan for prototype 0

The second part of the program focuses mainly on the development of start-ups by the students. The student teams should be ready to stand the test of the market after the two years, and it is imperative to monitor the progress closely. Yet, a very individualistic approach is required to assist each company as all of them face different challenges, promote a different product or targets a different market. To ensure that the students get maximum support and have enough flexibility to respond to market needs, the student teams themselves will be required to propose a line of milestones to be achieved for the next semesters. These milestones cover all aspect of the company's business, starting from product development to marketing and finance. The milestones will include measurable targets and provide descriptions on how the target should be achieved. The milestones will be signed off by the advisory board, which will also supervise the progress and agree if the milestones have been met or not. Yet, the marking must not be a simple "fill or kill" but the evaluation is based on questioning why the milestone was not met, separating between variables the students were influencing and those they couldn't control at all. Thereby, the students will be forced to critically reflect on the events and processes to identify valuable lessons. Additionally, it was decided to require students to keep a diary of their learning experience. The setting of the milestones will occur through the handing in of a written proposal from the students. The milestones will align with the overall business plan. The advisory board will review the suggested milestones and discuss them with the student teams individually. The advisory board has ultimate decision power on whether or not the proposed milestones are fine or not.

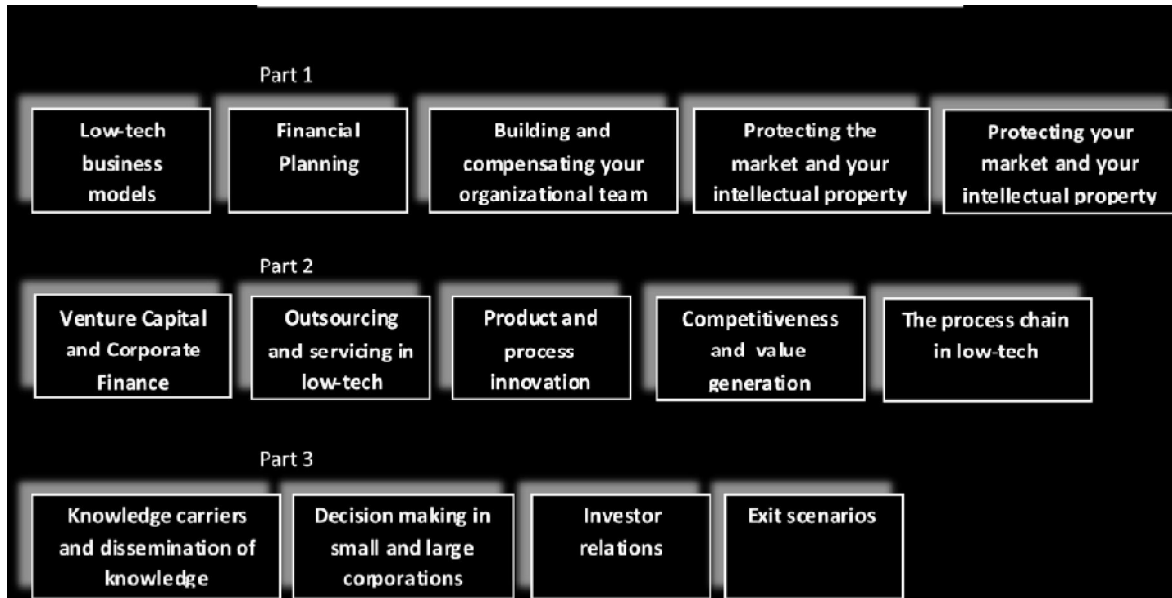
From there on, the students report on a monthly base on their achievements. Due to the effort that will be necessary to review their work, it will be advisable not to involve the whole advisory board but specific individuals/academics to oversee the progress.

Teaching schedule

As mentioned earlier in this document, entrepreneurial education is different to management oriented MBA-style classroom lectures. Taking the student's needs and interests into account, the teaching will balance sharing entrepreneurial experiences over textbook lecture. To accommodate the necessary degree of freedom and

individualized learning experience, text-book teaching in class rooms should be limited to the absolute minimum. Instead, the emphasis should rest on experimental opportunity and team learning to function as an early state company. The teaching schedule is designed to accompany the development of the companies and the direct needs of the student to take their ideas further.

The lecture series



The exit phase

In the last part of the program, the students will decide if and how their company will be able to strive on its own. The students will work out a detailed suggestion on how this target will be achieved. Most importantly, the success of the exit plan will depend on whether the company is able to raise the necessary financial means to start their business and how they make use of the production abilities they have access to. Starting off on green grass by building up own production capabilities will most likely be hard to achieve. Rather, the success of the company will depend on how it makes best use of its own ecosystem and the network to which the students will gain access throughout the course.

Supportive institutions

Business incubators

Although many universities all over the world have set up business incubators, the empirical knowledge on how the business incubator, the university and the industry truly relate to each other is still very limited (Rothschild and Darr, 2005). For an analysis on the dangers of copy-and-paste approaches in innovation and commercialization support in second-mover countries in business incubators, please see Gstraunthaler (2010). Business incubators are, however, very suited to host the companies during the length of the program and beyond.

Advisory board

The advisory board holds a key position for the success of the program and takes an active role throughout the curriculum. The board will collectively decide on which teams to accept into the program after the first semester based on their business plan. Thereafter, they will agree on the milestones with the student teams and will supervise their completion. The advisory board will guide the student teams through the exit phase and will support them in their start-up phase. The advisory board consists out of senior staff of leading low-tech companies, start-up entrepreneurs, outstanding academics and members from the investment community like venture capitalists. Most importantly, the members of the advisory board must come from outside the universities and have a proven successful track record of entrepreneurial activity. "Setting up an advisory board outside the university, which is unbiased, has superior knowledge of the market, and is free of politics. Otherwise, you are dead".

Alumni Networks

Alumni Networks constitute out of former students who have graduated from the same institution. Many of them might have started their own company in the meantime and became successful entrepreneurs or hold influential positions elsewhere. Through an alumni network, a sense of community is created that allows new entrepreneurs to find support for their business activities. The mentioned support can be plentiful, ranging from sharing one own experience up to financial donations to the company. "The trick is tracking your alumni. Once they are successful, ask them to support the new start-ups"

Summary and conclusion

This paper stresses the importance of fostering venture creation and innovation in low-tech sectors in emerging markets. Instead of following the leading nations in their approach to S&T policy, emerging markets can win more by acknowledging their competitive advantages in low-tech areas. While many policy initiatives focus on financial support for start-ups, this paper suggests to launch an educational initiative and to offer an entrepreneurial program geared towards venture generation for low-tech. The suggested program consists of three parts and reflects the information needs of companies in their early development. Although there is plenty of space for more in depth research about the particularities of start-ups in low-tech, previous research has shown that there is a good reason to treat low-tech industries differently from high-tech. Still, further research is needed to better understand how to foster entrepreneurial activities in these sectors.

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